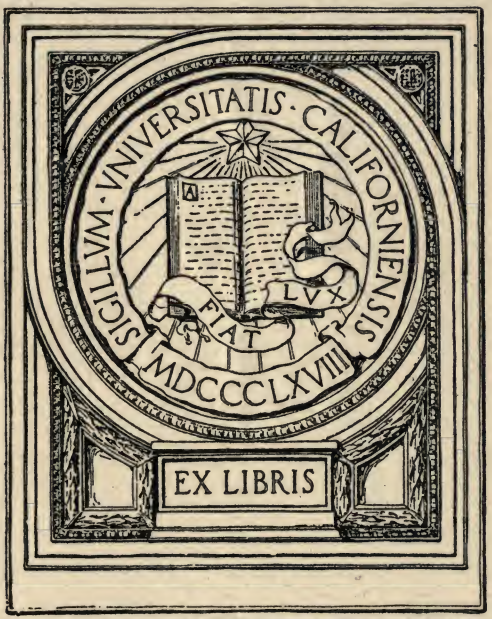
Overhead Expense and Percentage Methods

A LECTURE ON
THE COST OF DOING BUSINESS

Henry F. Baillet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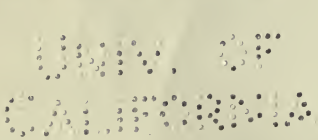
Overhead Expense
AND
Percentage Methods

A Lecture on the Cost of Doing Business, explaining how to find it and what to do with it when found. With practical examples of its use taken from actual business experiences

By

Henry F. Baillet

"If it helps you, tell the other fellow,
That he also may be helped"



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PREFACE.

This book owes its existence to the fact that almost every time the lecture has been delivered, some one deplored the fact that they had not the matter in book or pamphlet form for future study. On several occasions local Associations had engaged stenographers to take the lecture for the future benefit of their members.

However, such attempts proved futile for the reason that without some study of the subject matter no stenographer could furnish an intelligent result. Feeling that these occurrences testified unmistakably to a need for such a treatise I have put it in book form, somewhat condensed, but substantially as delivered, adding also a compilation of questions and answers and other data. The purpose that induced me to go a lecturing—in the first place, was a desire to put the fundamental truths regarding Overhead Expense and Percentage Methods into such plain language that the ordinary everyday business man, who graduates from the ranks of the mechanic without any special business training, could easily understand them.

Almost every time the lecture has been given some elderly or old man (who had spent practically his whole life in business without having achieved a modest competency for his old age) would come up and say:

"I wish I had heard this thirty years ago, I would be better off now."

For the young man starting in business it furnishes the foundation for a liberal education in business arithmetic.

I have been asked if, and told that, I was exploiting the Burton Method or the Burrough's Method, etc., etc. For a matter of information would say that I find on investigation that the methods of proportioning the different factors forming parts of a sale which I use, are similar or the same as those used by the parties named, and other writers. It is also probable that I had unwittingly absorbed some of their thoughts as I have for twenty odd years read every issue of some five or six trade publications.

However, so far as the principles governing the loss ratio and replacement ratio inherent in percentage are concerned, they are as old as numbers. My first acquaintance was made therewith in 1887. At that time I was employed in the Supreme Office of a Life and Health Insurance Association. In getting out the Annual Report for the New York State Insurance Department, I tried to verify my work by percentage methods. For instance, on roll at beginning of year age 36—? New certificate written during year age 36—? On roll end of year age 36—? Died during year age 36? Passed to a higher age during year? Came from a lower age during year—?

We are not discussing insurance matters here and I have simply given the foregoing as an illustration of what was required.

Now, in attempting to prove my work by per-

centage methods I found that having added a certain percentage at age 36 to those already on hand and passing a certain percentage into a higher age, as well as bringing a certain percentage from a lower age up to age 36 and other ages, I could not make things come straight until I gave proper consideration to the loss and replacement ratios inherent in percentage methods.

In the lecture it has been my aim to make this phase so plain that no one can misunderstand it.

The facts and data submitted are all based on actual experiences in the plumbing and heating business. However, the principles treated are the same in any business, and the whole method of presentation, etc., is especially adapted to any branch of the building industries.

Carpenters, painters, masons, electricians, etc., have about the same problems as we have, a little different in detail, but fundamentally the same. To all such this treatise can be especially recommended.

In getting out the synopsis cards showing the different percentages there was nothing to guide me. I do not know of any publication on business mathematics that has a similar lay out. I found it necessary (in order to compare different business experiences) to work out this synopsis and may therefore claim it as an original proposition. Students of the subject will find it advantageous to go still further in this direction.

I want to take this opportunity to thank those men who have so freely helped in this work by giving

me a detailed statement of their business and who in some cases have thrown their books open for my investigation, appreciating very much their confidence in the honesty of my purpose and investigation.

I believe that this is the first time that detailed data has been gathered from actual experiences and collated in just this manner. It would have been impossible of accomplishment without the aid of these men.

The entire trade and business world is indebted to them.

If only somewhere, someone is benefitted by this great amount of detail investigation extending over a period of four years and not yet ended, I shall consider that all my endeavors have not been in vain.

"If it Helps You, Tell the Other Fellow that He also may be Helped."

There seems to be a difference of opinion among writers on business mathematics regarding technical terms, especially as to the meaning of the terms *net* and *gross* as applied to costs and to profit. In this book *gross* is taken to mean—by large or in the rough, if you will. Gross cost meaning first or superficial cost, namely the actual cost of labor and material, those things which the proprietor buys direct to sell again. Net cost means the final or true cost namely labor, material and overhead expense. Gross profit likewise means the profit on the gross out of which expenses have still to be paid. Net profit means the final or neat

profit, after everything that is to be added has been added and everything that is to be subtracted has been subtracted.

This explanation is necessary as many teachers and writers take *gross* cost or profit to mean always the larger amount and *net* to mean always the smaller amount. This confusion of terms has resulted at times in printed presentations making me say just the contrary of what I wished to convey. While a gross ton of coal is a larger amount than a net ton, it does not follow that a gross cost must be a larger amount than a net cost. If the reader will bear in mind that in this presentation of the subject the term GROSS always means the first cost; and the term NET always means the final or neat cost, there will be no confusion of thought. The same applying to gross profit and net profit.

HENRY F. BAILLET.

Irvington, N. J., March 1915.

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CHAPTER I.

OVERHEAD EXPENSE AND PERCENTAGE.

The purpose of this lecture is not to tell you what percentage must or should be figured as overhead or what profit you should make. It is to call your attention to the necessity of knowing what overhead expense is, and to try to explain how to find and apply that knowledge in your business life.

In general business lines attention was first drawn to the divergence between school methods of percentage and profits and the natural business methods about 1880.

Scientific business management and cost accounting as such is a comparatively new study. The factory with its repetition of processes, its piece-work and its engross production where the clipping of one second on two or three operations of several hundred employees makes a difference of hundreds of dollars per week, of course, occupy a position in relation to cost account that never will or can be approached in our business. Nevertheless, we also have our little problems along these lines that require our attention.

Prior to about 1900 the essays and talks at our conventions and gatherings were almost entirely devoted to sanitary and purely technical matters.

The mercantile questions were not thought of. Our members and the trade in general consisted of a bunch of good mechanics of more or less earnest

and more or less honest sanitarians but, as a rule, of poor business men.

We had spent our spare time and money to advance our technical skill but had paid little or no attention to methods of obtaining a profit commensurate with our endeavors.

In New Jersey the matter was first publicly broached in a paper on system in the plumbing business read at the 1904 State Convention.

Mr. Aldous, of Passaic, N. J., in 1908, took up the O. H. X. question with a blackboard talk which was freely published in the trade papers.

Mr. Morgan of Detroit, Mich., did the same thing at the Michigan State Convention of 1909.

This presentation was repeated at the National Convention at Galveston, Texas, in 1911, and others throughout the country have done similar good work during the past ten years.

In other lines of business these questions have been taken up more or less thoroughly until at the present time almost every retail trade or merchant's association is studying the proposition very earnestly.

Our various trade publications have been full of these different problems now for several years. Still in spite of all this publicity, out of forty master plumbers to whom I had put a point blank question a few years ago, only three had gone into the matter in detail in their own business; ten had made a stab at it in a half hearted manner; a number of the remainder made a guess and twenty never had taken up the matter at all.

One of our local younger members, to whom I had put the question, told me that after a man had done contract work for a little while he would come pretty d— near knowing whether he was making anything out of it or not. "Gentlemen, that is about as near as the most of us get to it." The truth is the most of us don't know, some of us don't want to know. We are jogging along fairly comfortably and are afraid to know what we are really doing. Now why this apathy regarding so important a matter? It is mostly carelessness, largely lack of knowledge as to how to go about it and foolish fear of our inability to handle the matter.

One frequent excuse is lack of time which is purely imaginary but mostly it is a lack of temperamental inclination.

We are like a little boy who coming home the evening of the first day of school was asked by his father what he had learned. He said, "Well, pop, I have learned one thing, and that is that I need a thicker pair of pants."

The first thing that strikes us when we look this question squarely in the face is that we also figuratively speaking need a thicker pair of pants.

My purpose is to try and show you how easy it is to ascertain and apply these apparently intricate mathematical calculations. Now, please don't make the mistake of thinking of me as a mathematical sharp or anything of that kind. I am just an ordinary plumber like yourselves who has the temperamental inclination to dig into things and desire to help

himself by helping others in the trade to understand these problems.

We have had at various times talks on these subjects by professional bookkeepers and mathematical experts but we do not seem to understand their language. It is a great deal like the lady who went to a fashionable physician complaining of her health. The physician, after examing her said, "My dear madam, what you need is oxygen; come every afternoon at 3 o'clock and take an inhalation. It will cost you five dollars per visit." The lady seemed highly pleased and said, "There, I knew that other doctor didn't understand his business; he told me all I needed was a little more fresh air."

What we need is not superfine theoretical expositions but a little fresh air treatment of the underlying principles regarding O. H. X. and percentage methods.

Now, in the course of this lecture if there is anything said or put on the blackboard that you do not thoroughly understand, I wish you would please arise and ask questions, because so long as there is one man in the room who does not understand, just so long will the results be unsatisfactory to you and to me.

The illustrations that will be placed on the blackboard are only for the purpose of showing you how; they are not to be taken as figures applying to your own individual business, although they do represent an average result as existing under average business conditions at this time.

Basis of Presentation.

The illustrations are based on a $15,000 annual business. Now, why?

The total amount of business reported from 102 shops in New Jersey from a period of one year, from July 4, 1911, to July 4, 1912, was $2,784,725.00, giving an average of $27,301.00 per shop. However, out of these 102 shops, 60 reported doing between $9,000.00–$21,000.00, therefore, $15,000.00 being the mean, seems to be the average amount of business done by the general run of shops in New Jersey, and I believe, from subsequent reports that it is about the general average of more than one-half the shops in the Eastern States. Western and especially far western shops seem to average somewhat higher.

I want to ask your indulgence for going minutely into details which is necessary in order that we may understand one another.

Someone has figured out that the average life of a $10.00 bill is ten months but we do not want to jump at the conclusion that a $1.00 bill will last us one month. Figures and averages are dangerous things unless we understand just exactly what we mean, why and how we use them.

What is Yearly Business.

In looking at a $15,000.00 business we should have a clear understanding of what we mean by a $15,000.00 business. We must have a clear conception of what constitutes annual amount of business done. In this and other definitions I pro-

pose to give you the natural definition rather than academic ones, in other words, use plumber's English.

As both receipts and charges will overlap each other from year to year, in as much as receipts of one year may be for charges of the preceding year, and as charges of one year will not become receipts until the following year, so we can not take either our receipts or our charges as a year's business. We would take all work done and material handled in your business, whether finished or unfinished, each year bearing its own burdens, regardless whether the work has been charged, paid for or not charged or never to be paid for, as the amount of business done for that year; in other words the amount of a year's business is all material and labor used in your shops during that year.

If not chargeable to a customer, to a sale or to a job, it must be charged to yourself or to profit or loss. It should appear in the total amount of business you are doing if you want to provide a thick enough pair of pants.

What Constitutes Overhead Expense.

The next question is, what constitutes or is chargeable to O. H. X.? Broadly speaking, O. H. X. is all expense or money paid out which is not directly charged or chargeable to a customer or provided for in an estimate for contract work.

There are a number of lists of items that have been published during the past few years and which are used by men in our trade who are talking on

this subject, some of which you unquestionably have already seen and gone over. I may, however, be able to show you more of the why and wherefore. For that reason we will go over the items of a similar list at this time.

EXAMPLE NO. 1.

Salary	$1375.00
Rent	240.00
Light	12.00
Heat	24.00
Telephone	48.00
Horse and wagon	360.00
Bookkeeper	520.00
Insurance	10.00
Taxes, license	10.00
Carting, freight	26.00
Carfares	24.00
Tools	104.00
Collections	50.00
Bad accounts	75.00
Driver	520.00
Waste material	70.00
Replacing defective goods	35.00
Labor lost	206.00
Allowances and discounts	75.00
Interest on capital	90.00
Postage	20.00
Stationary and printing	20.00
Association dues	18.00
	$3932.00

Salary.

The first item on our list is salary. Many men say why salary? The proprietor gets all the profit there is, where does he come in for salary.

The fact, however, is that salary is not profit and for this reason, "We can not speak of profit until a job has been finished, charged and paid for"; until an operation has been completed—profit as such does not come into existence.

The necessity of salary or cost of management, however, comes into existence the minute you open your door for business and sometimes even before that. Therefore, salary is justly chargeable to O. H. X. and cannot be considered profit.

The next question then arises, "How much is a man entitled to charge for salary in his O. H. X. account?"

The professional accountant tells us just as much as he can earn somewhere else, or just as much as he would be obliged to pay some one else for doing that work. We, in the plumbing business, however, have taken a more definite criterion. We say, a master plumber is entitled to draw for salary at least as much as he pays a journeyman plumber, because if he was not engaged as a master plumber, he could earn that amount as a journeyman plumber, therefore, we put the item at $1,375.00 per year, which in my home city is what we pay a journeyman plumber; $5.00 per day—44 hours in a week and 50 weeks in a year. In other words it means that it will pay your salary and you can go home Saturday afternoons and take two weeks' vacation in the summer without pay. This, we feel, is the lowest sum a self-respecting master plumber should allow for in his O. H. X. account.

If a master plumber works with the tools part of the time, that part of the time, which is charged to a customer or provided for in an estimate, is not O. H. X. For example:—A man working half of the time with the tools would charge half of his time as productive labor and half as O. H. X.

Rent.

The next item is rent which we put down at $20.00 per month or $240.00 per year. This is about the lowest rate which, in my home city, one could hire a place for, fit to do a $15,000.00 business.

Often men will say, "Why, I don't pay any rent. I own the place"! If a man owns the place in which he does business he is entitled to charge his O. H. X. account with just as much rent as he could obtain by hiring the place to some one else. Using it himself debars him from letting it thereby depriving him of that revenue, therefore the business is justly chargeable with that item.

If you want to be exact, you can take the valuation at 5%, add thereto the expenses of upkeep, taxes, insurance, etc. This will give you the actual cost to you as a rental. Rent in some form or other you do pay whether you rent from another owner or own and rent from yourself.

Light.

Light we put down at $1.00 per month or $12.00 per year. Of course, some of my friends have said, "We do not keep open at night, we use hardly any light." But they forget the many evenings they sit at home figuring estimates on work or making out bills. Therefore, considering that as an expense to the business, $12.00 a year is very light for light.

Heat.

Heat we put down at $24.00 which would buy four tons of coal at $6.00 a ton.

Telephone.

Telephone at $48.00 per year. That is the lowest rate, we in my home city, can hire a telephone for business.

Horse and Wagon.

Horse and wagon we put down at $30.00 per month or $360.00 for the year. That represents the cost of board for a horse, horse shoeing and light repairs to vehicle. It does not provide for replacements.

Bookkeeper.

A bookkeeper we will put down at $10.00 per week or $520.00 per year. I do not mean that you should not pay more than $10.00, nor do I mean $10.00 a week is a sufficient sum for a first-class accountant. I do know, however, that a majority of our people do their own bookkeeping, have their wives or families do their bookkeeping, or hire lads or misses at $5.00 or $6.00 a week. Therefore, I am putting it down at $10.00 a week as an average pay.

Now, there is one phase of this bookkeeping question that I want to call your attention to, because I feel keenly on the subject.

Many of us take our children into the business and expect them to help us without remuneration.

Sometime ago when speaking on this subject in a small town, one of the gentlemen objected to the list of items. He said, "I do not have all those expenses. My boy who goes to school keeps my books, that's good enough for a plumbing shop."

I asked him what he paid the boy, and his answer was, "Pay him nothing. He gets all he wants to eat and plenty of clothes and a dollar to spend once in a while."

Another one of the members of the local Association who heard this conversation wrote me a few weeks afterward, saying that his boy, who chummed with the son of the member spoken of previously, had asked him about the bookkeeping proposition for his father, and the answer was, "Yes, I take care of the old man's books and I take care of the old man's business and you can bet your boots I take care of myself."

Now, here is a man who is making a thief of his own son because he did not have gumption enough to obtain a price for his work which would enable him to hire the bookkeeping done. If you gentlemen want to make thieves of your sons and something worse of your daughters, just ask them to help you in your business for the clothes on their back and the food that goes into their stomach, and if in after years they break your hearts and your bank accounts, you have nobody to blame but yourselves.

If you need the help of your families well and good, but pay them at least what you would have to pay someone else. It is enough to sacrifice your own life; don't sacrifice your family as well.

Insurance.

The next item is insurance. We do not include liability insurance which under the present em-

ployees' compensation act is vitally necessary; simply cover a little fire and vehicle insurance which we figure at $10.00 per year.

Taxes and License Fees.

Taxes and license fees we will put down at $10.00 a year. It has been said to me often, "Why taxes are personal matters." True, but if you are a working man, you will have to pay perhaps $1.00 poll tax. As soon as you have a business your personal tax is raised according to what they think your business is worth; in other words, being in business occasions the tax, therefore, the tax is chargeable as an O. H. X. of the business.

Freight and Cartage.

The next item is freight and cartage which we put down at $26.00 per year which is simply what it would cost to hire an extra horse one-half day each week.

Carfare.

Carfare we put down at $24.00 a year. Often men have said to me, "That is too much," but when they have investigated a little more closely it is too little. It is one of those small things; we put our hands in our pockets and pass out the nickels and the dimes not thinking of the amounts. But if you will place a certain amount of money in a separate envelope and pay only carfares from this sum, you will soon find that $24.00 a year is a very low estimate for carfares on a $15,000.00 business.

Tools.

Tools, loss, wear and tear we put down at $2.00 per week or $104.00 per year.

Collections.

This means such moneys as you can not collect personally or easily, which you will have to give to a collector or a lawyer, and we are figuring this at 3/100 of 1% which amounts to $50.00 per year.

Bad Accounts.

Bad accounts which means those that you do not collect at all, we put down at ½% or $75.00 per year.

You remember well the lady who came to your place in an automobile and told you that she was tired of having Sam Jones and Dick Brown do her work because their work was entirely unsatisfactory, that she was recommended to you as being a first-class mechanic, and that she was going to give you all her work. This sounded very good to you and you thought you were going to get a good customer. You did about $300.00 of work for her and you haven't been paid yet and probably never will be. You have those kind and so do I, and every other man in this room. Those are bad accounts.

Driver.

We will give the driver as much as the bookkeeper which is $520.00 per year.

I am well aware of the fact that a majority of our people do not employ a driver. They drive their own horse or have a boy drive. But you must re-

member that when you get up at 5 o'clock in the morning, do your own hostler work, drive your horse, put him in the stable, you certainly should figure more than a 44-hour week on the first or salary item, because you are working nearly 70 hours.

You are simply using a $5.00 per day man to do a $10.00 per week man's work.

Waste Material.

This means odds and ends, split pipe, broken fittings, etc., which we put down at 1% of $7000.00 or $70.00.

The summer before last as I was looking after some work a distance away from our shop, running along in our machine, I saw a new building in the course of erection and some men came out of the cellar and started to throw things at a couple of dogs across the street. One of these things struck the machine and I found that it was a ¾-inch galvanized fitting.

The men on the job did not have to pay for them but it was an expensive luxury to the boss, to throw money at fighting dogs. This is one way of wasting material.

Replacing Defective Goods.

Replacing defective goods is one item that always makes us hot under the collar. Why in the name of good common sense a master plumber should pay for the defects and shortcomings of not only himself and his own employees but also for the manu-

facturer, the supply dealer and the jobber all the way up and down the line, seems almost unexplainable. However, the conditions of the present day make it so that we have to shoulder the responsibility. Even if the supply man does make good the fixture, the cost of putting in, let alone the ill will of your customer, you have to suffer. When we place this item at ½ of 1% of $7000.00 which is $35.00 per year we make it a low estimate on a $15,000.00 business.

Labor Loss.

You send a man out in the morning with three or four small jobbing slips. He comes back at noon and he has done perhaps one job out of the four. In one of the other places there was nobody home; in the other, the lady was washing and would not have the fire dumped and at the third the lady did not know whether he was a peddler or tramp and would not let him in. You have those things and so do I.

Then again in contract work you spend a day or more getting the material ready for the job. You send a man on the job and he decides that he can not or will not use a fitting you have sent and he sits down to read the paper until the boy goes back to the shop to change the fitting—MORE LABOR LOST.

Then again your supply house sends goods direct on the job, they tell you that they have shipped them; you send your man on the job to find that they have not sent the material. They sit down

to wait for material or orders—MORE LABOR LOST.

So if we figure 5% on 3 mens' wages per year it will make $206.00 a year for LOST LABOR.

Allowances and Discounts.

You all know what that means. The lady where you put in the last bath-tub saw a scratch on it but she said nothing until you presented the bill and then she politely told you that she would not pay the price of a first-class tub, but if you would deduct $5.00 from the price, she would pay the bill.

Of course, you do not wish to take this to court and you take the bill less $5.00.

Or, that tank valve which you put in for your neighbor started leaking from a lead chip. He, of course, told you nothing of that until his bill had been presented. The time for your man going there to make it good is an allowance which you feel you must give.

Those are a few of the many things for which you make allowances and allow discounts on your bills.

For this we estimate one-half of 1% of a year's business or $75.00.

Interest on Capital.

The next question that arises is: "What is capital"? Capital invested in your business is the value of your stock of merchandise, your tools, fixtures, horse, wagon and equipment, plus the amount of your outstanding accounts due and payable to you plus the amount of cash on hand and

in the bank; minus what you owe for supplies or other things connected with the business.

On this you surely should be able to figure a 3% interest, because, if this were not invested in your business, you could put it in a savings bank and receive at least 3% on it. By having it tied up in your business you can not invest it elsewhere, therefore your business should bear the interest charges.

If, as sometimes happens to many of us, you are obliged to put a note in the bank for which you pay a discount fee or interest, this is also chargeable to the interest account as it simply means capital beyond your means which you had to borrow for your business.

We put this down at 3% on $3000.00 or $90.00 in this case.

Postage, Stationery and Association Dues.

Postage at $20.00 and stationery at $20.00 require no explanation. Association dues we put down at $18.00 per year. In some associations they pay as low as $12.00 and some in my home state as high as $36.00 per year. So we will strike an average of $18.00 and I will say that this is the cheapest tool that you find in a plumbing shop.

Considering your association membership as part of your business equipment you will find nothing that gives you so large a financial return if you will properly use it as your membership in Master Plumbers' Association.

Now, there are other items, such as advertising, charity, replacement of horse and wagon and machinery; soft soap and other incidentals which we will not include in this list simply because we do not wish to swell the total unnecessarily. These items you must add as you find them in your business.

The list as it stands foots up $3,932.00.

We find, therefore, that $3,932.00 is a conservative O. H. X. on a $15,000.00 business.

How to Find Percentage of O. H. X.

What percentage does this represent?

In finding percentage it always gives us a clearer view of what we want if we put it in the shape of a fraction. For instance: $3,932.00 is what percentage of $15,000.00?

We put it in the shape of a fraction and divide the upper figure by the lower.

EXAMPLE No. 2.

$$\frac{3932}{15000}$$

```
15000)3932.0000(.2621 or 26 100%
      30000
      -----
       93200
       90000
       -----
        32000
        30000
        -----
         20000
         15000
         -----
          5000
```

$$\frac{21}{100}$$

We find that this represents $26\frac{21}{100}\%$ of a year's business.

The first two places to the right of the decimal place in the answer are or signify per cent, the next two, hundredth of per cent.

If a quotient runs to the left of a decimal point, the figures to the left are 100%.

For instance:

2.621

This would read $262\frac{1}{10}\%$.

The answer is not dollars or cents, but it is *per cent.*

In this discussion we want to be absolutely conservative, so we will make still another cut and assume that a $15,000.00 business operates under a 25% O. H. X., instead of $26\frac{21}{100}\%$ as our lesson shows, and I believe that 25% is about the mean average of a business of that size.

Please remember it may not be your individual percentage. Your percentage may be higher or it may be lower. However, if you do about $15,000.00 business and find that your O. H. X. runs considerably below 25%, I would advise you to go over your figures carefully to see what you have forgotten.

If on the other hand you run quite some over 25%, I would advise that you use your pruning shear, as you are under a bigger expense than your business will bear.

Assuming that 25% is the O. H. X. on the business under scrutiny, of what use is this knowledge to us?

How can we apply it or how can we apply the knowledge of our own individual expense? Let it be what it may. Its value is its use in estimating what our work is worth, and as a help to avoid doing business for less than cost.

On the Nature of Percentage.

In using percentage as a tool to work with, we should have a plain understanding of what percentage is, a plain conception of the nature of the tool we are handling.

Percentage is here used as a standard of comparison for amounts, as a thermometer is a standard of comparison for temperatures and a 2-foot rule a standard of comparison for lengths. As we compare lengths by inches and temperatures by degrees, so we can compare amounts by percent or hundredths. Percentum means 100 parts or 100ths.

One amount compares with another amount accordingly, as each contains a less or a greater number of 100ths, just as one temperature compares with another temperature according as it contains a greater or less number of degrees, or as one length compares with another length, as it contains a greater or less number of inches.

Percentage in itself is not a wonderful wizard that does things. It is simply used as a yard stick for figures.

It is, however, a double barrelled weapon. If you use the wrong barrel, it kicks.

Now what is it that tangles up so many of us in attempting to handle percentage?

Is it not due to the fact that we mix up discount with percentage and apparently a further fact that percentage can be and is estimated *on* and *off* just as well as percentage *of*.

EXAMPLE NO. 3.

$100.00 at 50% off gives us $50.00.
$ 50.00 at 50% on gives us $75.00.

It takes 100% on to bring the $50.00 back to the original $100.00, although it takes only 50% off to reduce the original $100.00 to $50.00.

Taking up the matter of figuring price-list cost we must remember that discount is not percentage although percentage is used in figuring discount. This is not absolutely necessary. In some lines of trade, flat discounts of $1.00 per dozen or $3.00 per case are in vogue.

To illustrate the replacement ratios of percentage: An article is listed at $18.00—40% off. We figure $18.00 minus 40% equals $10.80. Now if we should attempt to make our selling price by adding 40%, we obtain $10.80 plus 40% equals $15.12 and not $18.00. Neither do we obtain the original figure by adding 60%, as $10.80 plus 60% equals $17.28 and not $18.00. It will take $66\frac{67}{100}\%$ to replace the 40% impairment because $10.80 plus $66\frac{67}{100}\%$ equals $18.00.

Probably the clearest illustration of this proposition is offered by the experience of one of our members.

A real estate agent for whom Jack did considerable work demands 10% discount. Jack soon found that he could not afford to pay this out of his own pocket as some of the work was pretty close. He, therefore, adds 10% here and there on the bills.

One month the bills just happened to foot up $100.00 even; Jack adds the usual 10% and sends in a statement of $110.00. The real estate man happened to be in funds and in the next mail Jack receives a check for $99.00. He could not understand where the other $1.00 had gone to. He brought his problem to the association meeting and when put on the blackboard it looked something like this:

EXAMPLE NO. 4.

$100.00+10%=$110.00
$110.00—10%=$ 99.00

There was nothing wrong with the mathematics. The trouble was that Jack did not make any provision for the percentage impairment.

Jack now adds 12% and the blackboard illustration looks like this:

EXAMPLE NO. 5.

$100.00+12%=$112.00
$112.00—10%=$100.80

To be mathematically exact it would be necessary to add $11\frac{11}{100}\%$. For

EXAMPLE NO. 6.

$$\$100.00+11\frac{11}{100}\%=\$111.11$$
$$\$111.11-10\%=\$100.00$$

There are tables published showing these replacement ratios in full. I simply went into this matter to show you the underlying facts upon which such tables are based and to impress upon you the why and wherefore of the method of fixing a selling price which I am going to explain; also to show you the snare we must always look out for in figuring percentages; in measuring by percent.

Discount is percentage *off*, something taken away.

Expense is percentage of or a part of.

Profit is percentage of or a part of a sale or business transaction.

Is this entirely clear?

The Application of this Information.

A fixture is bought for $18.00 net, at what price should this article be sold to yield a living profit, assuming that 15% is a living profit. Now mind you I am not saying that you should or ought to make 15% profit. That depends entirely upon the character and amount of your business and your personal valuation of your services. We simply use 15% as an illustration because the average of a business life is according to a recent magazine article, twenty-four (24) years. That is, taking 1000 busi-

ness men as they go, 990 are either dead or out of business in twenty-four years.

Fifteen per cent on a $15,000.00 annual business for 24 years will yield $54,000.00, which at 3% saving bank interest will bring $1620.00 per year. This one can consider a competency for old age with its infirmities and curtailed earning powers.

We will simply use 15% as an example because 15% net during our productive period will yield a competency when our powers wane.

Popular Errors in Figuring.

We will first illustrate the method of a man who knows nothing about his O. H. X. and probably cares less.

He figures 15% profit because he thinks that is what others are asking or just because he thinks 15% is about right.

He will figure something like this:

EXAMPLE NO. 7.

Cost of fixture	$18.00
Labor and material	15.00
First cost or gross cost	$33.00
Add 15% of $33.00	4.95
Total	$37.95
Sale price	$40.00

He will probably say, I will make it $40.00 even and think he has cleared 15% and a little something besides for a good smoke.

Now let us see what has really happened:

EXAMPLE NO. 8.

Cost of fixture	$18.00
Labor and material	15.00
O. H. X. 25% of $40.00	10.00
Net cost	$43.00
Sale price	40.00
Net loss	$3.00 or
7½% of the sale	

And the Larger the Job the Greater the Loss.

Now let us take the case of a man who knows that he has an O. H. X. to pay but does not know how to apply that knowledge correctly. He estimates:

EXAMPLE NO. 9.

Cost of fixture	$18.00
Labor and material	15.00
O. H. X. 25% of $33.00	8.25
Profit 15% of $33.00	4.95
Total	$46.20
Sale price	$48.00

He will probably say make it $48.00 even and feel sure, absolutely sure he cleared at least 15%.

Now let us see what has happened in this case:

EXAMPLE NO. 10.

Cost of fixture	$18.00
Labor and material	15.00
O. H. X. 25% of $48.00	12.00
Net cost	$45.00
Sale price	48.00
Net profit	$3.00

which is $6\frac{6}{10}$% of the sale and not 15%.

Now the question is how should this job have been figured to yield a net profit of 15% on the operation, assuming 25% O. H. X.

I am here reminded of a little incident I witnessed some time ago while waiting for a car at the D. L. & W. Railroad Station in Newark.

A train came in from a suburban town; a fashionable lady, well dressed, came down the steps from the depot; passed an Italian candy and fruit store where an old Italian lady was sweeping the side walk. It was a wet and very mushy morning and the spattering from the broom ornamented the lady's silk dress. She became quite vexed and started to berate the sweeper. The old Italian woman putting her entire weight on the broom and looking up at the lady said, "Why you go in front of the broom, why you no go back of the broom, you fool"?

It is up to us in this proposition to get behind the broom.

We have been ornamented by the spatters long enough.

The first thing we must get hold of and tie fast to is that—

The sale price represents 100%.

A Correct Method.

To figure by percent intelligently we must have somewhere something that represents 100% and that is the whole or the finished article. In this case the SALE PRICE.

When you attempt to figure any part thereof as the whole, as 100%, you get into deep water, you lose your footing and soon are hopelessly floundering.

Of course, it is possible to sub-divide the sale price and add percentages on parts thereof, uniting them again and then estimating the profit on the reunited entity.

This I say is possible, but it is not practical for the average small business man nor is it practical for the average master plumber. Even then, the whole, the result is the only thing in the entire equation that represents 100%. All component parts are measured as 100ths of this 100%.

Is this Entirely Clear?

EXAMPLE NO 11.

O. H. X. representing	25%
Profit representing	15%
We account for	40%
The other factor or gross cost represents	60%
Total or sale price	100%

The gross cost or first cost $33.00 being 60% of the sale price which sale price is entire amount or 100%.

The rule is:

Divide the amount of gross cost by the percentage it represents. The answer will be the sale price.

Divide the Amount of the Gross Cost by the Percentage it Represents.

EXAMPLE NO. 12.

$33.00÷60%=$55.00

.60)$33.00($55. is the selling price of the job
300

300
300

Now how do we know that this is correct?

A method to be a value must be susceptible of mathematical proof. Now we will prove this proposition.

EXAMPLE NO. 13.

Gross cost	60% of $55.00.....	$33.00
O. H. X.	25% of $55.00.....	13.75
Profit	15% of $55.00.....	8.25
Total....	100%	$55.00 sale price

This selling price provides a profit of 15% and an O. H. X. of 25%.

This method is absolutely correct, whether it is a $1.50 job or whether it is a million dollar job, although we might be satisfied with less than 15% on the million dollar job.

In delivering this lecture I have asked for original figures from the audience and have worked them out on the blackboard, so they could see how this method worked out in their cases.

Twenty-four inches makes 2 feet. Taking a 2 foot rule as the whole, as 100%, if we turn down 50% of that rule we have 12 inches left. If we add 50% of the 12 inches by turning up the next section of 6 inches, we have 18 inches and not the 2 feet we started with. We will have to turn up

both 6-inch sections thus adding 100% before we get our original 24 inches.

When a physician asks for a 10% triturate of morphine he does not mean 10% of morphine added to 100% of vehicle, but he does mean 10% of morphine and 90% of vehicle.

The scientists do not make any mistake in estimating or designating an amount by percentage.

The ultimate result, in our case the selling price, is 100% or the whole. All component parts thereof are represented by 100ths, by percentages of the whole.

There is nothing in the entire equation that represents 100% excepting the selling price. Therefore, all percentage computations are correctly based on the selling price.

There are other correct methods besides the one we are recommending but there is no other so simple and there is no other simple method so correct as the one we are explaining.

Basis of Examples Given.

The job we have been illustrating is one that is taken from an early period of my business life when I thought that my O. H. X. was about 13 to 15%, figuring as I did at that time, that getting a profit, I was not entitled to any salary.

It was a day work job and as entered on my old day book looks like this:

EXAMPLE NO. 14.

	Cost	Charged
One I. E. lavatory	$18.00	$27.00
Time and help	5.25	8.10
Material	9.75	20.90
Total	$33.00	$56.00

I suppose I thought I made a profit of $23.00 or 73% gross which I concluded ample to cover my O. H. X. and leave about 60% net.

Now let us see what really happened:

EXAMPLE NO. 15.

Gross or first cost	$33.00
O. H. X. 25% of $56.00	14.00
Net cost	$47.00
Sale price	56.00
Net profit	$9.00
or 16 4/5% of sale and not 60%	

So that instead of having a 60% net profit the entire net profit was a little over 16%.

If I had charged my customer 100% on the gross cost, the price would have been $66.00. I would have cleared $16.55 or 25% net on the operation.

Now we will prove this proposition:

EXAMPLE NO. 16.

Gross cost	50% of $66.00	$33.00
O. H. X.	25% of $66.00	16.50
Profit	25% of $66.00	16.50
Total	100%	$66.00

So if your customer accuses you of high-way robbery, extortion and all the crimes in the decalogue

because you charged him double what you pay for a ⅜-inch gas fitting, you can honestly and truthfully tell him or her that they do not know what they are talking about, because

EXAMPLE NO. 17.

When O. H. X. = 25%
100% added to gross cost will yield 25% net profit
or
If you want to obtain 25% net profit, you must add 100% to gross cost.

It is about time we wake up and get on the job and do our figuring in the proper manner.

Value of Knowledge of O. H. X.

My object, as stated in the beginning, was to show you how to handle this proposition of O. H. X. and profit percentage, not telling you what your O. H. X. is nor what profit you should get or estimate to obtain. Those are things each man must find out and decide for himself.

The underlying thoughts are:

First, that we should know what proportion our O. H. X. is of the business we do, so we can provide for sufficient expense loading to cover this item.

Second, that we should use such methods of estimating contract work as will reasonably assure us of the percentage of profit we estimate or expect to obtain therefrom, be it 2% or 20%.

Third, that we should know how much and what percentage of profit we are really receiving from our business, in justice to ourselves, our families, our customers and our supply dealers. In short, to use

every means that will help us to know instead of guessing.

Since beginning this educational work I have received a number of men's figures of their last year's business.

I would be glad to receive such figures from any of you. Just send me the information:

Total amount of business.

Amount expended for O. H. X.

Amount expended for productive labor.

Amount expended for merchandise.

I will work out the percentages and give you a clean statement. It is yours for the asking, although it would be better for you if you worked this out yourself.

Some Actual Experiences Compared.

The comparison I am now going to put on the blackboard is that of three actual business experiences.

It is a very interesting comparison as it shows what different results are arrived at using practically the same tools to work with.

It also shows the principal that we have been studying to-night, as applied in finding out what a year of endeavor has been brought forth.

I have on file a large number of such cases. I selected these three because they are practically identical in general surroundings and because I personally know the men whose business they represent and know that these are absolutely true statements of straight plumbing business.

Example No. 18.

Case	No. 1	No. 2	No. 3
Amount business	$14,500.00	$17,000.00	$14,990.00
O. H. X.	2,995.00	3,599.00	3,873.00
Productive labor	4,600.00	4,500.00	4,828.00
Merchandise	7,500.00	8,000.00	4,630.00
First cost or gross cost	12,100.00	12,500.00	9,458.00
Final cost or net cost	15,095.00	16,099.00	13,331.00
Net profit	....	901.00	1,659.00
Net loss	595.00	....	....
Amount of gross profit added to first or gross cost	2,400.00	4,500.00	5,532.00
Percentage added to first or gross cost	$19\frac{83}{100}\%$	36%	$58\frac{49}{100}\%$
Percentage O. H. X. of business	$20\frac{65}{100}\%$	$21\frac{17}{100}\%$	$25\frac{81}{100}\%$
Percentage merchandise of business	$51\frac{72}{100}\%$	$47\frac{5}{100}\%$	$30\frac{88}{100}\%$
Percentage productive labor of business	$31\frac{72}{100}\%$	$26\frac{47}{100}\%$	$32\frac{20}{100}\%$
Percentage profit of business	....	$5\frac{75}{100}\%$	$11\frac{6}{100}\%$
Percentage loss of business	$4\frac{10}{100}\%$	....	....
Percentage O. H. X. computed on productive labor	$65\frac{11}{100}\%$	$79\frac{97}{100}\%$	$80\frac{26}{100}\%$
Percentage O. H. X. computed on merchandise	$39\frac{93}{100}\%$	$44\frac{98}{100}\%$	$83\frac{65}{100}\%$
Percentage O. H. X. computed on 1st or gross cost	$24\frac{75}{100}\%$	$28\frac{79}{100}\%$	$40\frac{94}{100}\%$

The first thing that attracts our attention is that No. 1 made a loss of $4\frac{1}{10}\%$ with an overhead expense of only $20\frac{65}{100}\%$ while No. 2 made a profit of $5\frac{3}{4}\%$ with an O. H. X. of $21\frac{17}{100}\%$ and No. 3 with an O. H. X. of nearly 26% made a net profit of $11\frac{6}{10}\%$, showing that it is not always the lowest O. H. X. that brings forth the biggest profit.

We are all inclined to feel that when we can work with a low O. H. X. that we can do work cheaper for our clients. The consequence is that we give away what belongs to us in the way of added economy.

No. 1 with $4,600.00 of productive labor spends $7,500.00 for merchandise; No. 2 with $4,500.00 productive labor spends $8,000.00 for merchandise, showing that in these two cases practically the same character of work was done.

The facts bear this out as both of these gentlemen do a mixed business of which a good portion is new work.

No. 3 on the other hand with $4,828.00 of productive labor charged used only merchandise amounting to $4,630.00. This gentleman does absolutely no new work; his work is all jobbing.

The O. H. X. of No. 1 amounts to $2,995.00 who made a loss while No. 2 who made a profit has an

O. H. X. of $3,599.00 and No. 3 an O. H. X. of $3,873.00.

There is less than $1,000.00 difference between the highest and the lowest amount in a year's expense for O. H. X.

There is, however, a large difference in the amount of gross profit added to first or gross cost.

No. 1 added $2,400.00 which means $19\frac{83}{100}\%$.

No. 2 added $4,500.00 which means 36%.

No. 3 added $5,532.00 which means 58½%.

It is plainly to be seen from all the figures that it is not the low O. H. X. that makes profit. It is the amount or percentage added to first cost that governs O. H. X. as well as the amount of business done.

The proof of the above tables is in Table 19 (see page 45)

This we illustrate simply to show that this method of illustrating a year's business is susceptible of proof. That it is based on correct principles.

In order to show the influence of the amount added to gross cost, we will take, for instance case No. 1, who added less than 20% and contrast it with the same business if he had added 36% and also case No. 2 what would have happened to him if he had added 20%.

Example No. 19.

Proof	Case No. 1	Case No. 2	Case No. 3
Merchandise	$7,500.00..51 72/100%	$8,000.00..49 5/100%	$4,630.00..30 88/100%
P. labor	4,600.00..31 72/100%	4,500.00..26 41/100%	4,828.00..32 21/100%
O. H. X	2,995.00..20 68/100%	3,599.00..21 17/100%	3,873.00..25 81/100%
Profit	.....	901.00...5 75/100%	1,659.00..11 6/100%
Net cost	$15,095.00.104 9/100%	.....	.....
Loss	595.00...4 9/100%	.....	.....
Amount business	$14,500.00....100%	$17,000.00....100%	$14,990.00..99 96/100%

EXAMPLE NO. 20.

	No. 1 was	No. 1 would be	No. 2 was	No. 2 would be
Amount business	$14,500.00	$16,456.00	$17,000.00	$15,000.00
Productive labor	4,600.00	4,600.00	4,500.00	4,500.00
Percentage productive labor of business	$31\frac{72}{100}\%$	$28\frac{56}{100}\%$	$26\frac{47}{100}\%$	30
Merchandise	$ 7,500.00	$ 7,500.00	$ 8,000.00	$ 8,000.00
Percentage merchandise of business	$51\frac{92}{100}\%$	$45\frac{57}{100}\%$	$47\frac{5}{100}\%$	$53\frac{6}{100}\%$
O. H. X.	$ 2,995.00	$ 2,995.00	$ 3,599.00	$ 3,599.00
Percentage O. H. X. of business	$20\frac{65}{100}\%$	$18\frac{2}{10}\%$	$21\frac{17}{100}\%$	$23\frac{99}{100}\%$
First or gross cost	$12,100.00	$12,100.00	$12,500.00	$12,500.00
Final or net cost	15,095.00	15,095.00	16,099.00	16,099.00
Amount added to 1st or gross cost	2,400.00	4,356.00	4,500.00	2,500.00
Percentage added to 1st or gross cost	$19\frac{83}{100}\%$	36	36	20
Net profit	X	$ 1,361.00	$ 901.00	X
Percentage net profit of business	X	$8\frac{27}{100}\%$	$5\frac{3}{4}\%$	X
Net loss	$ 509.00	X	X	$ 1,099.00
Percentage net loss of business	$4\frac{1}{10}\%$	X	X	$7\frac{32}{100}\%$
Percentage O. H. X. on productive labor	$65\frac{11}{100}\%$	$65\frac{11}{100}\%$	$79\frac{97}{100}\%$	$79\frac{97}{100}\%$
Percentage O. H. X. or merchandise	$39\frac{93}{100}\%$	$39\frac{93}{100}\%$	$44\frac{98}{100}\%$	$44\frac{98}{100}\%$
Percentage O. H. X. on 1st cost	$24\frac{75}{100}\%$	$24\frac{75}{100}\%$	$28\frac{79}{100}\%$	$28\frac{79}{100}\%$

Where Does Your Business Stand.

Now there is no need of asking which of these categories you would like to fit under.

None of you gentlemen would like to be in the same business as in case No. 1.

The question is where does your business now fit under.

It is up to you to find out and if you are in the wrong pew, get out just as quickly as you can and get aboard the train that is headed for success on the road marked scientific, safe and sane business methods.

Just a few more figures of general interest.

The reports alluded to previously from (102) shops showed a total amount of business done—$2,784,725.00 of which jobbing was $1,027,921.00 and new construction work $1,756,804.00.

Assuming that the jobbing cleared as per our example, 15 to 20% and that new work showed a loss of from 5 to 7% as in our example. This would leave the trade in general as a whole with about 6% annual net profit which is not sufficient to keep us from want should we be fortunate or unfortunate enough to outlive our average span of twenty-four years in business life.

Another view, there were in 1913, 38,978 master plumbers listed in Boyd's Dispatch as worthy of business connections in our country and of these 4,937 or 12½% are credited as being worth $5,000.00 or over; 87½% are not worth as much as $5,000.00. After, in a great many cases, a life time devoted to

the business, they closed their business career by death or otherwise, often not only being worth less than $5,000.00 but too often owing their source of supplies and leaving their families in want.

In a vast majority of these cases I venture to say that it is because they do not know the mercantile or business end.

I thank you gentlemen for your attention and only hope that the talk this evening may have thrown just a ray of light on the proposition of O. H. X. and percentage methods.

CHAPTER III.

QUESTIONS AND ANSWERS.

At almost every gathering at which this lecture has been given there have been very pertinent questions raised which were answered by the lecturer, often with the assistance of some of the audience. The questions and answers here given are some of those raised on these occasions which tend to elucidate phases not covered by the lecture proper but pertinent to the subject thereof.

Concerning List Prices and Discounts.

Question—I have here a pamphlet issued by a manufacturer which illustrates a closet combination at $24.00 list. The discount quoted to the trade is 20%. What is the lowest price I can sell this at to come out whole, leaving a profit out of consideration? My overhead is about 23%.

Answer—$24.00—20% = $19.20 first or gross cost.
100%—23% O. H. X. = 77% representing $19.20.
Divide $19.20 by 77% = $24.93 net cost.

Question—There are 24 closets on a job I am now doing, the architect and owner want to substitute these particular closets as advertised and expect that they should be figured in the final adjustment at no more than the list price. Where do I get off at?

Answer—You get off with a *net loss* of 24 times 93 cents which is $22.32.

Question—What can I do in a case of this kind?: The printed list price is $24.00, that is the sale price made by the manufacturer. I cannot very well tell the owner and architect that that is wrong.

Answer—That depends entirely upon the wording of the original specification forming a part of your contract. If the contract or specification does not state specifically that fixture may be changed at the will of the owner and that such changes shall be adjusted upon list prices, you can absolutely refuse to make any change and insist upon the original contract. Otherwise you must stand the loss. My way would be to estimate the closets at a slight net profit and quote the architect and owner that price as a condition of changing the outfits; telling them the *truth*, namely: "That I cannot afford to furnish those goods at list price." And I certainly would inform the manufacturer that under his present list and discount *I cannot afford to handle his goods.*

Concerning Percentage Added and Results Thereof.

Question—If my O. H. X. is 25% and I add 35% to the cost of labor and material what will my net profit be?

Answer—The tables given on our cards do not cover this contingency and as I do not believe there are many men present who have been able to remain at school long enough to soak up algebra

we will endeavor to find a way that is understandable to all here.

We will assume that labor and material cost $100.00.

$100.00+35%=$135.00 sale price.
O. H. X.=25% of $135.00=$33.75+$100.00=$133.75 net cost.
$135.00—$133.75=$1.25 net profit.
$1.25÷$135.00=.0092+ or approximately $\frac{92}{100}$% profit.

Now we must prove this to know that we are right.

O. H. X.	=25 %	of $135.00=	$ 33.75
Profit	$=\frac{92}{100}$%	of $135.00=	1.242
First cost	$=74\frac{8}{100}$%	of $135.00=	100.008
	100%		$135.00 sale price

Question—I thought I would get 10% for an answer and do not yet fully understand why not. Will you please figure out what the profit would be if I added 40%?

Answer—

First cost $100.00+40%=$140.00 sale price.
O. H. X.=25% of $140.00=$35.00.
O. H. X.=$35.00+$100.00=$135.00 net cost.
Sale price $140.00—$135.00=$5.00 net profit.
$5.00÷$140.00=.0357 or $3\frac{57}{100}$% profit.

Now for the proof:

O. H. X.	$=25\frac{57}{100}\%$	of $140.00 =	$35.00
Profit	$= 3\frac{43}{100}\%$	of $140.00 =	4.998
First cost	$=71\frac{100}{100}\%$	of $140.00 =	100.002
	100%		$140.00 sale price

The reason you do not get 10% as an answer when you add 35% nor 15% when you add 40% is because of the impairment ratio in percentage *on* and *off* as explained in the lecture. Percentage *on* is one thing, percentage *off* is another.

$100.00+40\% = $140.00
$140.00—40% = $84.00 and not $100.00.

Regarding Results of Differing Conditions.

The next two questions were asked at different times and in different cities, in fact, they crop up in some form or other almost every time the lecture is given. They concern the opposite poles of one and the same question, therefore, the one answer can well serve for any and all questions concerning this particular phase of business experience.

Question No. 1—Many of our people imagine that because they do their own bookkeeping, look after their horse and attend to the chores themselves they have a very low overhead expense. Now judging from the returns you have gathered is this a fact or not?

Question No. 2—Is it not a fact that a man doing a large business has a considerably smaller com-

parative overhead expense than one doing an average or a small business. The so-called fixed charges such as rent, office help, light, fuel, etc., do not increase with a considerable increase in business. Does this not tend to make a lower percentage of overhead?

Answer—There is no definite rate of O. H. X. as applicable to certain size businesses. The returns that I have gathered show however a well defined line of cleavage although individual cases "jump the fence" quite frequently. The small man, so called, who does his own chores and often a large part of his customer's work personally, naturally has a smaller amount of O. H. X.

He, however, can do only a limited amount of business which makes his *percentage* of O. H. X. climb up greatly. If we consider the tendency of men in this category to work at very low prices because they *think* that they have a very low overhead we find that the customer is getting all the benefit that may accrue therefrom and the master plumber is working his head off for the benefit of the public. On the average I find that the percentage of O. H. X. in this category runs quite some higher than 25%.

On the other hand the tendency of the man doing a larger than ordinary business is to require more comfort for himself. As the remuneration from his business increases or rather as larger operations result in a larger amount of cash passing through his hands, he feels that he wants more

leisure; more of the business luxuries and he will as a rule require better shop facilities, better horses and wagons, better tools and more office help. He also is inclined to take bigger chances, so that he carries a larger financial burden in the way of notes and discounts for his customers. He also usually demands a larger salary for himself than the smaller business man.

As a matter of fact the individuality of the man himself is the dominent factor governing the raising or lowering of the O. H. X. percentage arising from a larger or smaller field of operation.

From a tabulation of twenty cases ranging from $4,000.00 to $125,000.00 amount of annual business I find that below $10,000.00 the average O. H. X. ran from 35 to 24%. From $10,000.00 to $20,000.00 the average indicated runs from 25 to 20%. From $20,000.00 to $50,000.00 the average figures are 20 to 15% and above that the averages figure out 18 to 13%. In no case on which I have been able to obtain authentic figures has the O. H. X. been lower than 13% of the year's business and this only in one case out of the twenty.

Although it is only fair to say that out of some forty cards tabulated, individual cases varied considerably from these averages.

This shows forcibly how necessary it is for every man to find out *his own O. H. X.* and not to figure on any average estimated by some one else. That is guess work.

Regarding Work Taken on Percentage Basis.

Question—I did a job last summer for a large manufacturing concern on a 10% basis. The firm paid all material bills monthly and furnished the money for the pay roll weekly. All I had to do was to check up the pay roll every week and check up the bills for material which was all done on the job. I claim that inasmuch as I had no carting or any other expenses and inasmuch as my time weekly for as many hours as I spent on the job was included in the payroll, I had absolutely no overhead expense on the job and my percentage was a net profit of 10% on the cost of the job. Am I right?

Answer—This job is one that not only paid 10% *on the cost* of the operation (not of the job), but through the manner in which it was carried out lowered your overhead percentage.

How much was your last year's business including this particular job? About $18,000.00.

How much did this job cost without your percentage?

About $4,000.00.

How much was your last year's O. H. X.?

About $3500.00.

Your total year's business was $18,000.00; your O. H. X. $3500.00; your overhead percentage was therefore $19\frac{44}{100}\%$. If you had not received that job your O. H. X. for the year's business would have been 25%. So your having that job, lowered your

percentage of overhead expense for that year $6\frac{56}{100}\%$. I want, however, to call your attention to the fact that it did *not* lower *the amount* of your overhead by one penny, *only the percentage.*

Furthermore, you would not be justified in basing your overhead loading for this year at $19\frac{44}{100}\%$. Because that particular job was really an unusual influence. Unless your line of business is such that this is a usual method with you it were wiser to eliminate this job from your O. H. X. computations. Consider it as outside of your business.

While the fact that you were paid for your personal time supervising, directing and doing the clerical work for this job puts it in a class by itself, you did probably have some overhead in the nature of carfares, wear and tear on tools, such as stock, dies, cutters, etc., that was probably balanced by that portion of your time which the firm paid for directly, not being chargeable to your O. H. X. account. This fact, that you were paid for all time you spent on and with the job, turned what would have been an unprofitable operation into a profitable one. Without this proviso 10% would not have been a profitable loading. It would simply have helped to *lower the overhead percentage for that year, which in itself does not create profit.*

The next questions, while asked at prior times and in different cities, throw more light on a similar phase of business conduct and are, therefore, given here.

Question—Some of our people take work at a very small margin during times of slack business, claiming that so doing is better than have nothing to do, as it at least helps pay some of the running expenses. Do you consider that this is good business practice?

Answer—That depends entirely upon whether or not the man knows exactly what he is doing and knows precisely how far he can go in this direction without harming his business. There are times when this practice seems justifiable and good business. The danger is that a man is very apt to make this thought a habit. The tendency then is to load up with unprofitable work to the extent that he cannot handle profitable work when it comes along. It has an unquestionable tendency to lower his standard and with it the standard of his competitors. The safe way is never to take any job even during a period of business depression that does not carry at least enough margin to cover the overhead expense and to do that only in a limited number of cases.

As stated before: "*It is only good business practice when you know just exactly what you are doing and how far you can go.*"

Question—In this city a great deal of work is being done on a percentage basis. In fact, I can say that almost all the larger work is done under these conditions, usually on 10%. Can you show us here if this is profitable and if not, why not?

Answer—That depends entirely upon the individual contract. If you mean that it is to be based on 10% being added to the bare cost of labor and material without any other item being provided for, then it is always at a loss and for this reason; We will say a man does a large volume of such work and thereby keeps down his overhead percentage, say to 20%.

A job we will say cost $2000.00 for labor and material. He receives therefore

$$\$2000.00 + 10\% = \$2200.00$$

The job has cost him $2000.00+20% of $2200.00 = $2640.00.

$$\$2640.00 — \$2200.00 = \$440.00 \text{ net loss.}$$

If the percentage of profit is allowed him on the sale price he comes off somewhat better.

As then it should be figured this way

$$10\% \text{ profit} = 90\% \text{ first cost.}$$

Divide first cost by the percentage it represents.

$$\$2000.00 \div 90\% = \$2222.22$$

The job costs him $2640.00, amount received $2222.00, and his loss is only $418.00.

The only way percentage work at 10% is profitable is when all overhead items, such as time of superintendence, bookkeeping, liability insurance, wear and tear on tools, etc., are paid directly by the owner. Or, when the percentage loading is allowed as an item of charge against the job direct.

For instance:

O. H. X. = 20%
Profit = 10%
First cost = 70% = $2000.00
$2000.00 ÷ 70% = $2857.14 due contractor.

Of course, we all understand that it will be a hard matter to induce the owner to see that a job the labor and material of which costs $2000.00 and on which he has agreed to pay the plumber 10% should cost him $2857.00. Nevertheless this is the *only way* by which the plumber *will net a 10% profit on the jobs.*

Question—In spite of what you say and what you figure, there are men in this town who are doing work on a 10% flat basis such as you explain must result in a loss and evidently or apparently are making it pay. Can you explain that?

Answer—Not in any honorable or honest way. I can, however, give you some light on the subject. We have some men in my home town who are doing this. I have asked them how. Two refused information. One gave me this explanation. "I include all my time of superintendence at twice the amount of a journeyman wages. I charge the job with liability insurance and I boost the cost of material wherever I can. I always try to have some of the preparatory work done in the shop where the architect or timekeeper cannot control the time. Sometimes I have a squabble when it comes to settling up but most times it works. If I did not do these things I could not exist."

Now you have both ways, the honest and honorable way and the dishonest and dishonorable way. Which do you think is best for the owner?

On Differential O. H. X. Loadings.

Question—I find that by separating my jobbing work from my contract work I obtain two different overhead percentages. I think that the way to estimate in contract work is to use the percentage found from contract experience. I can make closer estimates this way as my overhead on contract work is several points lower than my jobbing overhead. Don't you think that this gives one an advantage over his competitor?

Answer—This method will perhaps give you an advantage over your competitor but only so long as he does not use the same method. At the same time it gives your competitor an advantage over you as his overhead on jobbing work will be lower than yours. It does seem that in your anxiety to "put one over" on your competitors you are fooling yourself. My advice would be to stick to straight business as your evident desire to get the inside track will probably lead you to load your jobbing with costs that rightfully belong to the contracting and you will possibly kill off your jobbing customers by catering to low price contracting. Such things have happened before now.

Question—Some people advocate estimating the overhead on labor cost as being the proper method. Can you show us please what difference it will make?

Answer—Absolutely no difference at all, so far as covering your overhead is concerned. Providing you use the *proper percentages and the proper proportions* which differ in each case. You can load your overhead on the labor, on the merchandise or on the gross cost just as correctly as you can on the amount of business done or sale price. It simply means a more involved operation with no compensating advantage that I can see.

Let us take an example and see what we can make of it in a short form for comparison. As a basis we will take the figures from Case No. 2 in our experience comparisons, using the approximate even percentages.

Amount of business done was $17,000.00.

Percentage labor of first cost was	36%
Percentage merchandise of first cost was	64%
Percentage O. H. X. on year's business was.	21%
Percentage profit was	6%
Percentage O. H. X. estimated on labor cost was	80%
Percentage O. H. X. estimated on merchandise cost	45%
Percentage O. H. X. estimated on first cost was	29%

We will say for example the gross or first cost of a job was $100.00.

We will first use the method advocated in the lecture which gives us:

O. H. X.	21%
Profit	6%
First cost	73%
	100%

$100.00 ÷ 73% = $137.00 sale price

The proof is:

O. H. X. =	21% of $137.00 =	$28.77
Profit =	6% of $137.00 =	8.22
First cost =	73% of $137.00 =	100.01
	100% =	$137.00

This is the simple correct method. Although there are other correct methods which are not quite as simple and other simple methods not quite as correct.

If we had placed the O. H. X. on the gross cost, namely labor and material we have:

Gross or first cost =	$100.00
O. H. X. 29% =	29.00
	$129.00
Profit =	8.22
	$137.22

If we place the O. H. X. on labor cost we have this result:

As 36% of $100.00 =	$36.00
Productive labor =	36.00
O. H. X. 80% =	28.80
	$64.80
Merchandise 64% =	64.00
	$128.80
Profit =	8.22
	$137.02

If we place the O. H. X. on merchandise we have:

Merchandise =	$64.00
O. H. X. = 45% =	28.80
	$92.80
Labor cost =	36.00
	$128.80
Profit =	8.22
	$137.02

So you see there is absolutely no difference, *if the proper percentages are used*, so long as the same comparative amounts or the same percentage of the different component parts are used on the job as are contained in the year's business upon which the working percentages the *standard of comparisons* were found.

For instance, we may have a job on which the labor is only 20% of the first cost and the merchandise 80%, thereof.

If in this case we were to place the burden on the labor according to the percentage found from a 36 and 64% condition we would obtain this result:

Productive labor.... =	$20.00
O. H. X. = 80%..... =	16.00
	$36.00
Merchandise..... =	80.00
	$116.00
Profit..... =	8.22
	$124.22 instead of $137.00

If in this case we want to place the burden on merchandise we have:

Merchandise..... =	$80.00
O. H. X. = 45%..... =	36.00
	$116.00
Labor..... =	20.00
	$136.00
Profit..... =	8.22
	$144.22 instead of $137.00

These differences are caused by the fact that *the proportions of labor and material are different from those on which the percentages were found;* causing an overcharge of O. H. X. in the one case and an undercharge in the other. To charge the O. H. X. correctly it will be necessary to *find the proper percentages and the proper proportions in each individual case.*

Proponents of this method claim that at the end of a year the overcharges and undercharges will balance each other. That will be true only if the preponderance of either labor or material on the year's business has not changed from that on which the original percentages were found. In the meantime you are over and undercharging and *do not know where you are at.*

The more I dig into this proposition the more I am convinced that—for the plumbing business it is misleading in the extreme to attempt to place the O. H. X. loading on any of the component parts of a sale. To place it in the sale price by the simple direct method seems the wisest and safest for the average master plumber, who has not a retinue of trained accountants at his command to work out the proper proportions and percentages in each individual case.

Question—Is it not a fact that large manufacturing establishments place their O. H. X. on labor only?

Answer—I don't know much about any other business than the plumbing, tinning and heating business. However, in preparing this lecture I

have waded through a lot of cost accounting literature. A good many people I fear misunderstand what is meant by estimating overhead on labor in manufacturing. I believe that the term *labor hour* is used.

It costs so much per hour to run a machine for power, attendance, wear and tear, etc. That constitutes the labor hour cost for that operation. Every operation on stock goods manufactured for sale is measured by these units of labor hours.

For instance, a closet tank may undergo ten operations; the labor hour proportions on each job constitutes the manufacturing overhead. Added to this is the expense of selling and office overhead.

My advice to you is to stick to the plumber's problems; never mind what the factory does. We are not in their class; *our business is different.* The proportions of labor and material vary too much to make it a safe proposition.

Profit in Labor.

Another question that is frequently asked is one concerning earnings on labor time in jobbing work. We will take one such question as asked and the answer given as illustrating the principle applying in all such cases.

Question—We in this city are paying our journeymen $4.00 per day of eight hours and the customary charge is 75 cents per hour. What is our profit on labor?

Answer—That depends entirely on your overhead

expense. In order to illustrate we will assume that you have the average overhead of 25%.

Gross cost = .50 per hour. Sale price = .75 per hour.
O. H. X. 25% of .75 ..... = .18¾

Net cost ..... = .68¾
.75—.68¾ = .06¼ net profit per hour or .50 per day.

There is furthermore another viewpoint to take in this jobbing labor price which it is well to consider at times. There are any number of times when your jobbing plumber uses very little or no material. If you were to take these jobs individually without considering the rest of your business they are always done at a loss. Because a different set of percentages then applies. For instance we will take case No. 3 which is that of a strictly jobbing business and a profitable one at that.

We find that O. H. X. is $25\frac{8}{10}\%$ of total amount of business and that O. H. X. estimated on productive labor is 80½%; to be conservative we will place these percentages as 25 and 80% respectively. We will further assume for illustration that the rate of pay is .50 per hour and the customary charge .75 per hour.

Now if we estimate on the business as a whole we have the result as given, namely: a net profit of 6¼ cents per hour or .50 per day.

If on the other hand we take the job individually we have this result:

Gross cost	=	.50
O. H. X. 80% of .50	=	.45
Net cost	=	.95

.95—.75 = .20 net loss per hour or $1.60 loss per day.

And yet people will tell us when we sell labor at .75 which costs us .50 that we are making a profit of 50% or they think that they are absolutely fair and liberal if they concede that we only make a $33^1/_3\%$ profit. When as an actual fact we make on this character of work a net loss of $27\frac{13}{100}\%$ on the job. (.20÷.75 = .2713+)

Should the Good Client Pay for the Poor One?

Question—It does not seem entirely fair to me that I should charge my business losses up against my overhead expense; in other words make the good customer pay for the poor one. Do you consider that a just business policy?

Answer—Your conscientiousness does you credit and if you feel that in taking on the bad customer you made a mistake for which you should suffer, well and good so far as you are concerned. It is, however, likely to be bad for your family and for your business credit. Every business has a certain amount of bad bills. This is inherent in the business. It is a natural business expense and should of right be charged up against the business which in turn occasions it. That I believe is fair and good business principle. When you buy a

hat or a pair of shoes you pay your little part of the bill that the other fellow did not pay. When you pay your bill for plumbing supplies you pay your little share of the other fellow's bill who forgot. If you make too many bad bills among your customers you go out of business. You go to the bad and someone else must make it up for you either directly or indirectly. We all pay our share for the keep of the business derelict in one way or another. The poor rates, the benefit performance ticket and the contribution to the Bureau of Associated Charities are cases in point. The legitimate business losses are legitimately chargeable to the business, *i.e.*, to overhead expense. If you were not in business, you would not have the loss. Your overhead expense should be charged with the legitimate, the customary percentage of business loss. It is self evident that extraordinary or speculative losses must be borne by yourself personally.

Difference of Conditions. Past and Present.

Question—(By a real old timer). How is it, Mr. B., that in the days gone by when we knew nothing about overhead expense, we made more money in the business than we can get now in spite of all the new fangled didoes that are coming up?

Answer—I know of no better way to explain this seeming incongruity than by a mechanical illustration.

If you have a sewer to lay, you look the ground over and when there seems to be plenty of leeway

you will say to the laborer, "Oh, give her about two fingers to the length," and you will generally come out about right. Your general knowledge and experience enable you to do this, although you sometimes go astray and then when nearing the house or fixtures you run her absolutely level or even with a little dip the wrong way. She works all right for a time and then someone gets into trouble. Usually someone else has to bear the brunt of making it all right.

When a case comes up where you have very little leeway it becomes absolutely necessary to take some measurements and run some levels to ascertain the minimum amount of pitch allowable. Your guess work experience is then of no value and the man who uses the proper scientific method has it all over you. He makes no mistake. *He lays it right!*

Just so it is with the question of scientific business administration. In the old times you speak of work was estimated and business was conducted more on hap-hazard lines. Business conditions gave you more leeway. You laid out your business affairs like your sewers at what you considered a sufficient grade, the leeway of business conditions gave you a wider margin and when you made a mistake you ran along on a level to make up. If you or some one of you old timers dipped the wrong way, some one else had to make it good. It is a question in my mind if some of the ills we complain of now are not the direct result of the old time hit or miss methods of doing business.

The conditions of the present day are those of a sewer job that does not allow us much leeway. Increased competition, greater demands on life and more exact requirements of installation make it absolutely necessary that we take some measurements and run some levels to find out where we are at, else we are very likely to make a botch of the job and find ourselves in the proverbial hole. We cannot afford to make mistakes; we must use scientific methods to come out right.

The next question was received by mail and so answered.

Correctness of Principles.

Question—After hearing your lecture in B.—— I had occasion to talk it over with a friend who is a school principal and a teacher of mathematics. He claims that your method of figuring profit is all buncome; that whatever percentage is added to cost of labor and material is profit. Of course, there must be enough profit to cover expenses. Where do you get your authority to include the expenses in the cost?

Answer—From common sense business experience. I might, however, quote you the definition of profit as per the latest edition of Webster's New International Dictionary.

> "Profit: The excess of the price received over the cost of purchasing and handling, or of producing and marketing particular goods."

The President of one of our Massachusetts Local Association writes me as follows:

"I have talked to the principal of the local High School of Commerce and to the principal of a successful business college, and both admitted that this subject had never been treated in any book of arithmetic. I will say in justice to the first mentioned principal that he understood our viewpoint and stated that he hoped soon to have his advanced classes study this subject."

On Business Expansion.

Question—If a man does $20,000.00 worth of business at 30% added to gross cost, can he not do the second $20,000.00 at 20%? I don't see why not.

Answer—That depends entirely upon his O. H. X. and on his equipment. I could not advise any man on this question without full particulars on those points. We can, however, illustrate a hypothetical case in order to show the principles governing an answer to this case.

We will assume first a case where the *amount* of O. H. X. is not increased, in other words we will assume for illustration that a man can do $40,000.00 worth of business for the same *amount* of expense as $20,000.00 worth. And we will further assume that his O. H. X. is 23% of $20,000.00 worth.

His experience with the first $20,000.00 worth of business will look like this:

First—$20,000.00 worth of business.

Profit and expense loading, 30%.

As \$100.00+30% =\$130.00
and \$130.00—23% =\$100.10 we find that
\$20,000.00—23% =\$15,400.00 gross cost or 1st cost

Gross cost being	\$15,400.00
O. H. X. =23% of \$20,000.00 =	4,600.00
	\$20,000.00 net cost.
First	\$20,000 of business
Net cost	20,000.00
	00000 net profit

So he has done the first \$20,000.00 worth at actual net cost without any profit. The second \$20,000.00 worth is done at 20% added to first cost. (Without any more money being paid out for O. H. X.)

Second \$20,000 worth of business.

Profit and expense loading, 20%.

As \$100.00+20% =\$120.00
and \$120.00—$16\frac{66}{100}$% =\$100.00 we find that
\$20,000.00—$16\frac{66}{100}$% =\$16,668.00 gross cost or 1st cost.

Gross cost being	\$16,668.00
O. H. X. being	nothing
Net cost =	\$16,668.00
Second	\$20,000.00 worth of business
Net cost	16,668.00
	\$ 3,332.00 profit

So we *can* say that the first \$20,000.00 worth taken at 30% added to gross cost, paid the year's overhead and the second \$20,000.00 taken at only 20% added to gross cost, paid a net profit of \$3,332.00 or .08$\frac{33}{100}$% on the entire \$40,000.00 worth of business.

"The foregoing is, however, not a true picture of the year's business because the placing of the O. H. X. on a part only of the year's business is forced and untrue."

It is only given here as an example of *how not to figure.* An example of how people fool themselves.

The amount of O. H. X. is here estimated at $4,600.00 which on the entire $40,000.00 worth of business would be 11½%. This is considerably lower than any authentic figures that have been presented to us for any plumbing business of that size. The lowest O. H. X. percentage I would consider safe to estimate (in absence of the actual figures) would be 18%.

Working on that basis we have the following result:

First $20,000.00 worth of business taken at 30%.

Gross cost =	$15,400.00
O. H. X. 18% of $20,000.00 =	3,600.00
	$19,000.00
1st	$20,000.00
Net cost	19,000.00
Net profit	$ 1,000.00 or 5%

Second $20,000 worth of business taken at 20%.

Gross cost	$16,668.00
O. H. X. = 18% of $20,000.00 =	3,600.00
Net cost	$20,268.00
	20,000 worth of business
Net loss =	$ 268.00 or $1\frac{74}{100}\%$

Profit on 1st, $20,000.00 worth = $1,000.00
Loss on second, $20,000.00 worth = 268.00

Net profit on $40,000.00 worth = $ 732.00 or $1\frac{83}{100}\%$

So according to these figures you could not afford to take the second $20,000 worth at 20% as you make a loss on that transaction.

The mistake you make in your proposition is in assuming that the second $20,000.00 worth of work will *not* raise your overhead expense. It is true that it will not double the overhead but it will raise it sufficiently to make it unprofitable to lower the loading on gross cost from 30% to 20%.

There is another viewpoint to this question which must be considered. That is your equipment. If you are equipped to do a $40,000 business in tools, vehicles, office help, shop, etc., economically, it will raise your O. H. X. percentage considerably should you only get $20,000.00 worth of work one year; consequently it might prove profitable in that event to take the additional work in order to cover your overhead. Great care, however, must be exercised so as not to take it so low as to fall short of covering, which was what did occur in the case illustrated.

If on the other hand your equipment is fitted for a $20,000.00 annual business, the additional expense and equipment necessary to handle an added $20,000.00 worth of business, may possibly amount to more than the lowered percentage of loading will provide for.

The lesson we learn from this question and answer is the same that evolves from all studies of business processes, namely: That we must know our overhead percentage exactly in all its phases to be able

to do business intelligently and profitably. Otherwise, "Take a chance," with all that that phrase implies.

Finding Percentages.

Question—You say that it is easier to find the percentage by putting it in the form of a fraction. I don't quite understand that, or why you do it.

Answer—Percentage is fundamentally nothing else but decimal fractions. You say that 50 is one half of 100. That means that 50 is .50 or .5 of 100. Expressed in percentage it means that 50 is 50% of 100.

Or, 20 is 1/5 of 100. Likewise 20 is .20 or 20 one hundredths or 20% of 100. The principle is that governing changing common fractions into decimals, which is:

"Divide the numerator by the denominator," or, "divide the upper figure of a fraction by the lower!"

So if you want to find what percentage 5 is of 400 you put it into the form of a common fraction and proceed according to the rule for changing common fractions into decimals.

$$
\begin{array}{r}
\frac{5}{} \\
400)5.0000 \\
\underline{400xx} \\
1000 \\
\underline{800} \\
2000 \\
\underline{2000}
\end{array}
\quad (.0125 \text{ or } 1\tfrac{25}{100}\% \text{ or } 1\tfrac{1}{4}\%
$$

The proof is $400 \times .0125 = 5.0000$.

If you want to find what percentage 400 is of 5.

$$
\begin{array}{r}
400 \\
\hline
5\ )400(80.\ \text{or}\ 8000\% \\
\quad 40x \\
\hline
\quad\ \ 0
\end{array}
$$

The proof is $5 \times 80 = 400$.

Or, $5 \times 80.00 = 400$.

A business man spends \$642.00 for rent. He does \$7682.00 worth of business and he wants to find out what percentage, what proportion his rent bears to the amount of business done. He puts the proposition into the form of a fraction and proceeds.

$$
\begin{array}{r}
\$642.00 \\
\hline
\$7682.00)\$642.0000(.0835+ \\
\quad\ \ 61456xx \\
\quad\ \ \hline
\quad\ \ 27440 \\
\quad\ \ 23046 \\
\quad\ \ \hline
\quad\ \ 43940 \\
\quad\ \ 38410 \\
\quad\ \ \hline
\quad\ \ 5530
\end{array}
$$

This reads $8\frac{35}{100}\%$ or eight and thirty-five one hundredths per cent.

In business life equations are not usually carried to their ultimate conclusions as hundredths of one per cent is considered sufficiently definite for business purposes.

CHAPTER IV.

PROPORTIONING OVERHEAD EXPENSE.

Those who have studied and talked upon this matter of overhead expense among the crafts meet many and diversified opinions as to the proper proportioning, both in the methods of arriving at the proportions of overhead expense and in placing the burden.

Proportioning the Burden.

The proposition of placing the burden according to the amount of service rendered by the proprietor has many adherents. Some men believe that the burden should be placed entirely on the labor charges. Others again favor placing the loading on merchandise handled. While some believe that the delivered cost, the first or gross cost namely, labor plus merchandise, should bear the burden.

By using either or any of the methods or a combination of any number of them, the overhead expense can be just as correctly placed as by the method advocated in the lecture, which places the burden in the sale price, providing always that the proper proportions and the proper percentages or amounts are used.

Advantage over Competitors.

The adherents of all of these methods claim an advantage over their competitors from their par-

ticular method. The fact is that by placing the expense loading on any one of the component parts of a sale he will have the *advantage* over his competitor (who uses a different method) *on some jobs.* For the same reason he will be at a *disadvantage on other jobs,* accordingly as the factors of labor, material or superintendence preponderate in the different jobs. That these factors vary very considerably in different jobs is a fact so well known as to need no elucidation at this time.

We must always remember that, "The more we split up and complicate the finding and placing of the overhead expense burden, just to that extent do we invite *errors and* consequent *losses!*"

Question of Correct Principle.

The question that here presents itself is simply this: Which is the correct principle? And this again brings up the question: What is it that occasions overhead expense? Is it the proprietor's activity? No. For he may be sick and absolutely unable to attend to the business. Or he may own the business, but not be active in it, hiring some one else to run it. In either case the overhead expense goes merrily on. Clearly the proprietor does not occasion the overhead expense.

Is it the labor employed that occasions this expense or the fact that labor is employed?

The boss may work along without any help or he may have very much help. He will find that the percentage of overhead expense has not varied very materially due to either of these circumstances.

There are certain lines of mercantile businesses that employ very little or no productive labor. Still they all have overhead expense. Clearly it is not the labor that creates overhead expense.

Is it merchandise that occasions the overhead expense? A great many of our people stock very little material, the supply houses stock it for them. Very few stock any fixtures. While there would seem to be more moral justice in blaming the merchandise than any of the other factors, still the fact is apparent that the merchandise or the fact that merchandise is handled does not in itself occasion the overhead expense.

Why then should the customer whose particular job carries a preponderance of supervision called proprietor's service, or whose particular job may carry a preponderance of either labor or merchandise bear the entire or even the greater share of the overhead expense burden.

Overhead expense is occasioned by the simple fact that you are in business.

Every part and element going to make up your business in its entirety helps to make overhead expense. And the business in its entirety should rightly bear this expense or burden.

Of course, it is possible to figure out with approximate mathematical exactness how much each separate element contributes to the burden; how much each particular job and its component parts ought to bear—*but*, to do this presupposes an accounting department many times more extensive

and expensive than any plumbing business of the present day can afford. It would run up the overhead expense to a prohibitive amount in any competitive contracting business.

It may be applicable in large manufacture where practically the same operations (with the same material and with standardized methods) are carried on day after day.

It has academic value to the student of accounting mathematics and has undoubted value to the large manufacturer, but for the average business man it is impractical.

Conditions as They Are.

Several years ago a census was taken by interested officers of an association with 98 members in one of our medium-sized eastern cities. This showed 8 firms employing an office staff, that is one or more regular bookkeepers; 14 employed a young person to help with the bookkeeping and attend to the store; 10 had their wives or other members of the family to attend to their books. Of the remaining members 10 did not give any information and 56 pleaded guilty to taking care of that work themselves.

Of the 56 (so far as the officers were able to ascertain) 6 had graduated from grammar school and spent some time in a high school; 4 had taken a course in business college while learning their trade; 12 had never learned the mechanical trade but had drifted into the business after other mercantile experiences. The remainder had left school early to go to work and had had no mercantile or office

experience whatever prior to engaging in business for themselves. This condition we believe to be about the average condition throughout the country, in the plumbing and allied building trades.

Under these conditions it were manifestly absurd to consider any but the most simple direct method as being of practical value to the average business man.

Fair Way of Placing Overhead.

In the face of the foregoing it is self-evident that the fair, just and practical way is to find what proportion your overhead expense bears to the total amount of business done, and then to let each job in its entirety bear its proportion of the burden. Your shop or business is there for the accommodation of the public. The public who make use or have need of this accommodation should and must in justice pay for its maintenance.

If the public does not need this accommodation it will not patronize it and the proprietor had better go out of business rather than maintain it (as is too often the case) at the expense of his wife and children and at the expense of his creditors, simply because he does not know what it costs him to maintain this public accommodation.

CHAPTER V.

COMPARATIVE OVERHEAD EXPENSE STATEMENTS.

Two facts must ever be kept in mind in estimating the cost of doing business. One is that there is no universal percentage applicable to every case. Each man must find his own costs and govern himself accordingly. At the same time it is well to adopt an average compiled from the experience of others until the beginner gets definite data from his own experience.

The second fact is that a percentage that would seem extravagant in one business would really be very economical as applied to another business. Overhead expense percentage is not an arbitrary matter; it is a result. It is influenced by other factors in the total amount of business done. The other factors are cost of material, cost of productive labor and profit. The last item of these is more or less arbitrary and is the one factor that has much influence on the relative percentage of overhead expense. It is my intention to try to show this clearly. I shall try to do this by actual figures secured from various business men, comparing one statement with another.

Case No. 1.

For the first illustration I propose to take the case of a business run under a practical minimum of

actual overhead expense. Somewhat of the history of the case is given, so that the reader may understand the circumstances surrounding it.

In 1911 I attended an open meeting of a Master Plumbers' Association at which some non-members were present. While there I was asked to give a chalk talk on "Overhead Expense." In this blackboard demonstration I used the itemized list of expenses, as per the card published by the New Jersey Master Plumbers' Association. A few days later I received a letter from one of the non-members who was present, from which the following is extracted:

"It may be that you and some of the big bugs have 25 per cent. expenses, but that is too much. The other little fellows and mysel can beat that all hollow. I have got about all the work I can do and employ a plumber in busy seasons, and sometimes a tinner and can beat you out on any job if you figure 25 per cent. for expenses, as my expenses are much less. Half the items you put on the blackboard cost me nothing. I own my place, get along without a horse and wagon, do my own bookkeeping and make money. You ought to be able to get along with about 10 to 15 per cent. expense. Get next and learn the game."

Recognizing the name as that of a former fellow journeyman worker, I took the matter up with him by letter and later personally, as I also wanted to learn. To my surprise I found that an intelligent set of accounts were kept, simple but understandable, so we could trace all that came in and all that went out. We took one year from January 1 to December 31. The first item was salary. The proprietor in this case did not pay himself a salary, but took amounts for private use as he needed

them. These amounts in the year totaled $1050 in round numbers, or about $20 per week. Journeymen's wages in that town were $4 per day, or $24 per week of 44 hours.

Owner's Salary Less than Journeymen's.

This man gets to the shop at 7 o'clock a.m. and usually leaves for home at 6 or 6:30 p.m., averaging a 66-hour week, and this does not include time on Sunday mornings usually given to book work. He was entitled at journeymen's wages to $1650.00 for his salary. Nevertheless he drew only $1050.00. The time he actually spent with the tools on jobs during the year as charged on his books was $546.00, and he estimated that he spent another $100.00 worth of time on contracts working with his man. So we subtracted $646.00 from the pittance of $1050.00, which left $404.00 actually charged to overhead expense.

The next item was rent. He could rent his place easily for from $15.00 to $18.00 per month, therefore I claimed that $16.00 per month were chargeable to that item, which was finally allowed. Gas bills were next to nothing in summer and about $1.50 to $2.00 in winter, so that went down at $1.00 per month. Heat, which was furnished by a gasoline furnace in the office portion when wanted and a pot stove in the shop, was charged accordingly.

How the Overhead Expense is Kept Down.

He does not have a telephone. The butcher next door takes and sends all messages at a rate agreed

between them. He paid the butcher that year $3.80. No horse and wagon is kept, nor does he employ a bookkeeper. His fire and accident insurance cost $48.00 per year. His taxes are personal only. He has an arrangement with a local cartman by which he secures at a minimum rate the absolutely necessary carting service. All cartage possible is thrown on the supply dealer or house owner. He paid the cartman $18.20 during the year in question.

No account was kept of carfares, but by checking up the various jobs as charged we came to the conclusion that $26.00 was conservative, in view of the fact that no horse is kept. Tools were bought during the year to replace those worn out and lost. No allowance was made for collection. He collected what he could and let the rest stand and for bad accounts, "he guessed they were all good if he had time to go after them." However, after a bit he admitted that perhaps $20.00 would cover all the bad jobs he had done that year. Waste materials he had none; everything was used up somewhere or sold to the junk dealer twice a year. I found, however, in a back yard quite a lot of split wrought pipe, some broken tile pipe and other things we all know of, and finally he agreed that he had some waste probably worth about $5.00. When I mentioned replacing defective goods this made him sore. He was having trouble right then with one source of supply over some iron enameled ware and some closet tank linings, so when he said $50.00 I cut it down to a conservative $40.00. He

did not lose much on account of lost labor, as he generally charged it up some way. This item might possibly be worth $10.00 a year. Next week he wrote me: "Have looked into the lost labor question more closely; better make it $25.00." So I made it $20.00.

Items that Were Not Considered.

The matter of allowances on bills at settlement was another item he refused to consider at first, but finally came to the conclusion that he did make some allowances that year, perhaps $5.00. Regarding interest on capital, he estimated the value of tools and merchandise at $475.00. Outstanding accounts $416.13. Work done or contracts under way, estimated, $500.00. Unsettled bills from former years in process of settlement, $375.16; total, $1766.29. Deducting $243.16 for current supply house bills leaves $1523.13. Add to this a business bank balance of $486.75, makes an investment of $2009.88, or $2000 in round numbers, representing the savings of many years of journeyman's work and some 10 years in business. Surely he was entitled to savings bank interest on this.

However, he takes the stand that, when he was obliged to borrow some money he had to pay 6% interest, therefore charges interest on capital invested at the higher rate.

Postage and stationery were easily found on his books. Association dues he did not have, as he had never felt that he could afford the cost of mem-

bership. Advertising in programs, ball tickets, etc., cost him as scheduled. Then he has a helper. Allowing that he must have a competent helper, he pays him $10.00 a week. He claims that fully one-half this helper's time is charged to customers, so we charged half of his salary to overhead expense. This made a total overhead cost of $1265.17, divided as follows:

Salary	$404.00
Rent	192.00
Light	12.00
Heat	14.00
Telephone	3.80
Horse and wagon	....
Bookkeeper	....
Insurance	48.00
Taxes	5.10
Cartage	18.20
Carfares	26.00
Tools	38.75
Collections	....
Back Accounts	20.00
Driver	....
Waste materials	5.00
Replacing defective goods	40.00
Labor lost	20.00
Allowances	5.00
Interest on capital at 6 per cent	120.00
Postage	10.50
Stationery and printing	7.42
Association dues	....
Advertising	15.40
Boy's time	260.00
Total	$1265.17

The total amount of business done that year was $4983.63, which makes an overhead expense of 25.4% on the amount of business done.

Proprietor's time in productive labor was.	$646.00
Hired journeymen and helpers' productive labor was	285.00
Proprietor's helper's productive labor was.	260.00
Total productive labor	$1191.00

which makes an overhead expense of 106.22 per cent. on productive labor.

Productive labor cost	$1191.00
Year's supply bills	2324.11
Total first cost	$3515.11

The overhead expense was thus 35.38 per cent. of the first cost.

First cost	$3515.11
Overhead expense	1265.17
Net cost	$4780.28
Amount of business done	4983.63
Net cost	4780.28
Net profit	$203.35

Showing a net profit of 4.08 per cent. on business done.

Had the proprietor in this case, No. 1, drawn journeyman's wages for the number of hours he actually put in at his business it would have added $600.00 to his costs, and he would have been about $400.00 shy of meeting his overhead expenses. Only by working overtime and at less than standard wages was it made possible to show a net profit of a trifle over 4%. Had he, on the other hand, known what he now knows, he would have charged, as he now charges, an added percentage of profit, thus lowering his costs and thereby still more increasing his earnings.

Case No. 2 shows a very low percentage of overhead expense. It also shows plainly the fact that a low overhead percentage does not necessarily mean a successful or a profitable business.

Details of the Business Costs.

The rent charge on the business is small. Including the rent for a stable and lot, the shop being over the stable, the owner pays $18.00 per month. The amount charged for salary is definite, as the owner withdraws $35.00 per week for himself, win or lose.

Light and heat he has none. For telephone he pays $52.00 per year. The work, being mostly all new work, materials are carted by the supply houses. He runs, however, a converted touring car auto-wagon, with which he gets around to the various jobs and carts away the left-overs. This car costs for up-keep $300.00 per year, as he attends to most of his repairs himself. No bookkeeper is kept. His wife (who was a stenographer and office assistant before marriage) attends to his book work, for which he allows her $5.00 per week pin money. Insurance, auto insurance, liability insurance on several jobs when the contract called for it, also personal accident insurance, cost him for one year $280.00. Taxes—personal and licenses in four municipalities, as well as surety bonds—cost for the same year $51.00. Freight, cartage, etc., $35.00. Carfares were estimated at $10.00. Tools: He figures that his tools at the end of the year were worth $200.00 more than at the beginning, although

his bills for tools ran to nearly $300.00, depreciation being considered against first cost. Collections last year cost him $10.00. He estimates losses through bad debts to have been $300.00. Waste material he estimates at $100.00. Men are paid by the hour when at work on the job, so there is no lost labor. All the proprietor's time is employed in seeing that men are on the job and only when work is to be done. Allowances for goods claimed not up to the mark are estimated at $100.00. Interest on capital: Auto is valued at $800.00, stock and tools at $1200.00, bank balance, $400.00; total $2000.00.

As he owes the supply houses as much as is owing him on contracts, there is no cash investment, according to his accounting. Nevertheless, the interest on $2000.00 at 3% added to interest paid on notes and cash loans footed up for one year to $380.00. Postage is estimated at about $25.00. Stationery and printing bills were $34.60. Association dues: Master Plumbers' and Board of Trade, $24.00. Incidentals he estimates at $25.00.

Itemized Overhead Expense Account.

Salary	$1820.00
Rent	216.00
Light	....
Heat	....
Telephone	52.00
Automobile truck	300.00
Bookkeeper	260.00
Insurance	280.00
Taxes, licenses, bonds	51.00
Cartage, freight	35.00
Carfares	10.00
Tools	200.00
Carry forward	$3224.00

Brought forward	$3224.00
Collections	10.00
Bad accounts	300.00
Driver	....
Waste material	100.00
Replacing defective goods	....
Labor lost	....
Allowances	100.00
Interest	380.00
Postage	25.00
Stationery and printing	34.60
Association dues	24.00
Incidentals	25.00
	$4222.60

Total amount of business done for term covered by this statement, $24,480.00.

Percentage of overhead expense on business done, 17.25. Paid out in wages other than enumerated in expense, $7240.00. Percentage of overhead expenses on productive labor, 58.32. Merchandise purchased, $13,597.80. First cost, $20,837.00. Percentage of overhead expense on first cost, 20.36.

First cost	$20,837.80
Overhead expense	4,322.60
Total cost	$25,160.40
Amount business	24,480.00
Net loss	$680.40

When asked what percentage of profit he had figured to make the proprietor answered: "All I could get." When questioned closer it developed that he usually figured from 15 to 20% added to first cost. Some jobs where he stood in right had been obtained at 25% added to first cost, while some, where competition was keen, had been taken at 12% added to first cost. He had never before

this time had a detailed statement of his business affairs nor figured out what his overhead expenses were. He, like so many of us, had gone along month after month taking work at low prices because he thought his overhead expenses were practically nothing and because other people were doing that class of work at these low prices; on the theory that to keep moving meant doing business as long as he could cut his expenses.

"When you add 15% to the cost of labor and material you are losing money."

A Business of Another Type.

Case No. 3 fits in here very nicely. Like cases Nos. 1 and 2, it is essentially a one-man business. However, in the method of doing business the proprietor in this case certainly works on different lines than the men in the former cases. He does not attempt to do any productive work. While circumstances occasionally demand some small jobs from him personally, they are so few that he does not think it worth while eliminating them from his overhead expenses. He attends to the bookkeeping and buying and to his horse. This keeps him busy from about 7 o'clock a.m. to 5 or 6 o'clock p.m. Of course, he looks after the men and after his jobs, but always in business hours only.

This work he figures is worth $100.00 per month. On the first of every month when he pays his rent he draws a personal check for $100.00. In addition to this he drew various sums at different times as he felt that he needed them. The entire with-

drawals amounted in the year, under scrutiny, to $1340.00. He pays $22.00 a month for a store and small stable and shop in the rear. He had electricity and gas in the shop and stable, a gas soldering pot and small electric welding fixtures. All this cost him $13.60 per annum (the amount looks very small, but we must take the figures as given). Heat: He has a small steam plant, which last year burned four tons of pea coal at $4.80 per ton. His telephone cost $42.00. For the year his vehicle upkeep, without renewal provisions, cost $336.00. Insurance, $8.40 for fire and vehicle (very low). Taxes, personal, $4.20. Freight, $6.40. Carfares are estimated at $15.00 and tools are estimated at $15.00. Bad accounts, $45.00. Driver, nothing. Waste material estimated at $25.00. Replacing defective goods given at $18.60, labor lost at $15.00, and allowances at $20.00.

Interest on capital invested is given at $57.00. This figures out an investment of $1900.00, which looks conservative. Stationery and printing, $6.00, and association dues at $18.00.

This man certainly is not afraid of a high overhead, as he is well above the average. The peculiar part of this case is that he shows a higher net earning than either of the other cases (one of which shows a net loss), which have a lower overhead.

A comparison with case No. 1 shows a material account of only about $200.00 more. The difference evidently lies in the fact that this man is not afraid of charging a decent price for his work. The schedule works out like this:

Salary	$1340.00
Rent	264.00
Light	13.60
Heat	19,20
Telephone	42.00
Horse and wagon	336.00
Bookkeeper	....
Insurance	8.40
Taxes	4.20
Cartage	6.40
Carfares	15.00
Tools	15.00
Collections	....
Bad accounts	45.00
Driver	....
Waste material	25.00
Replacing defective goods	18.60
Labor lost	15.00
Allowances	20.00
Interest	57.00
Postage	10.00
Association dues	18.00
Stationery and printing	6.00
Total	$2278.40
Amount of business done	$6965.02
Percentage of overhead expense on business done	32.71
Productive labor	1859.40
Percentage of overhead expense on productive labor	122.88
Productive labor	1859.40
Merchandise	2416.72
First cost	4276.12
Percentage of overhead expense on first cost	53.31
First cost	4276.12
Overhead	2278.40
Total cost	$6554.52
Amount of business done	6965.02
Total cost	6554.52
Net profit	$410.50

which is a net profit of 5.89% on business done.

This party when questioned writes as follows:

"My business is altogether jobbing. Straight day work and contract jobbing, overhauling, etc. I aim to get an advance of 50% over cost of labor and material on small work up to $200.00, and an advance of from 25 to 50% on larger work, as the size of the job runs. I cannot, and no one else can, do a profitable business on a smaller advance than this. I have tried a lower percentage, and when I did so I obtained more business, but found no greater amount of profit at the end of the year. I aim to make 6% of net profit over a modest wage for my services, and I find I cannot make it unless I get my price."

This needs no further comment.

The three cases taken up in this article are illustrative of the majority of plumbing businesses. In 1912 the New Jersey State Association of Master Plumbers conducted an inquiry on liability insurance responsibility. According to its report, out of 122 returns received, 60 reported an annual business amounting to between $9000.00 and $21,000.00 So it may be said, with a fair assurance of being correct, that from $10,000.00 to $20,000.00 is about the amount of business done annually in the average plumbing shop.

In the first three businesses analyzed the proprietor took upon himself the bookkeeping and accounting end as well as the supervision, and in case No. 1 the major portion of the mechanical end also. In the three cases now to be considered the proprietors have their bookkeeping done, give some little time to working with the tools and the re-

mainder to general supervision and estimating. These conditions are such as prevail usually in shops coming under the category of medium size businesses.

However, these three illustrations, taken from actual business books, show a considerable variation in their overhead expense, and a still wider discrepancy in the financial results, for instance the first shows the following items of overhead expense:

Salary	$1375.00
Rent	300.00
Light	12.00
Heat	25.00
Telephone	60.00
Horse and wagon	300.00
Bookkeeper	384.00
Insurance, Taxes	100.00
Cartage, Carfares	10.00
Tools	15.00
Collections	25.00
Bad accounts	100.00
Driver (boy and owner)	50.00
Waste material	25.00
Replacing defective goods	25.00
Labor lost	25.00
Allowances	10.00
Interest on capital	90.00
Postage	25.00
Stationery and printing	25.00
Association dues	14.00
Total	$2995.00

Inquiry elicited the fact that absolutely accurate accounts were not kept, that is they were not kept separately. The figures, however, are vouched for as being within a few dollars, having been picked out of the general account, no attention being paid to the odd cents.

Total amount of business done		$14,500.00
Amount of overhead expense		2,995.00
Percentage of overhead expense on business done		20.65
Productive labor		4,600.00
Percentage of overhead expense on productive labor		65.11
Productive labor	$4,600.00	
Merchandise	7,500.00	
First cost	$12,100.00	
Percentage of overhead expense on first cost		24.75
First cost	$12,100.00	
Overhead expense	2,995.00	
Total cost	$15,095.00	
Business done	14,500.00	
Net loss	$595.00 or 4.1%	

When the owner's attention was called to this showing he was astonished. It surely is now up to him to ask a better margin of profit for his work. His overhead expenses are below the average, the various items making up the schedule are about as low as they can be bought for, but the man has been selling his work entirely too cheap.

Case No. 5 is that of a medium-sized business in a medium-sized city, the proprietor of which is a thorough mechanic, being a graduate of the New York Trade School. He also has had the teaching of adversity and experience in business life. He took over his business from a relative when it was virtually bankrupt and has put it on a paying basis, the result showing that he must have added on the average 31.2% to the gross cost in order to have cleared a net profit of 5.3%. I understand that this man aims to obtain 50% over gross cost

and probably some of the competition contract work, where he had to meet other men's figures brought the net percentage down. The figures given by him are as follows:

Salary		$1300.00
Rent		360.00
Light, Heat		72.00
Telephone, Bookkeeper, Postage, Stationery and printing	Office expense account	523.00
Horse and wagon, Cartage and driver		470.00
Insurance		100.00
Tools		34.00
Collections, Bad accounts, Waste material, Replacing defective goods, Labor lost, Allowances, Interest	General expense account	658.00
Association dues		31.00
Advertising		51.00
Total		$3599.00

Note.—The grouping of items is due to the manner of accounting in vogue in this business. Here also the pennies were eliminated to make the figuring easier.

Amount of business done	$17,000.00
Amount of overhead expense	3,599.00
Percentage of overhead expense on business done	21.17
Productive labor	4,500.00
Percentage of overhead expense on productive labor	79.97

Productive labor	$4,500.00	
Merchandise	8,000.00	
First cost	$12,500.00	
Percentage of overhead expense on first cost		28.79
First cost	$12,500.00	
Overhead expense	3,599.00	
Net cost	$16,099.00	
Amount of business done	17,000.00	
Net profit	$901.00	or 5.3%

These figures show a paying business run with every care as to the overhead expense and with no extravagant salary list, still the percentage of overhead expense is higher on all points than that of the previous case, while the amount paid out for productive labor is a little lower and the merchandise account a little higher, the evident cause of the difference in net results being the difference in the amount of profit added and obtained.

Another case is that of a brother partnership, where a stove and tinware store is run in conjunction with a plumbing shop. The charges on overhead expense are estimated on percentage of services rendered, the rent on comparative floor space occupied. The salary is that of one brother who has entire charge of the plumbing department less the time charged to jobs direct. This is interesting, as many plumbers, especially in small towns, have similar combinations, the claim often being made that by this method they keep down their overhead expenses. The comparison of results does not bear

out this claim, just as in cases Nos. 1, 2 and 3, we find a refutation of the claim that a man doing all his own work, bookkeeping, etc., has little or no overhead expense.

The actual figures show that while the actual cost of doing business is lower, the percentage it bears toward the other factors, namely, business done, productive labor and net cost is often higher. The question hinges entirely on the amount or percentage of profit that is added to the net cost, taking into consideration the overhead expense and the amount of business done.

Salary	$1476.80
Rent (⅓)	312.50
Gas (⅔)	13.36
Heat (½)	25.00
Telephone (½)	58.00
Auto, horse and wagon (½)	210.00
Bookkeeper (½)	403.00
Insurance (⅓)	31.27
Taxes (⅓)	87.50
Cartage (½)	6.00
Carfares (¾)	113.00
Tools (on shop)	100.00
Collections (¾)	35.00
Bad accounts (on shop)	20.00
Drivers (½)	300.00
Waste material (on shop)	26.00
Replacing defective goods (on shop)	52.00
Labor lost (on shop)	78.00
Allowances (on shop)	72.00
Interest (on shop) tools and merchandise	208.00
Postage (¾)	40.62
Stationery and printing (½)	29.67
Association dues	40.00
Advertising (½)	81.26
Total	$3818.98

Amount of business done		$14,960.88
Amount of overhead expense		3,818.98
Percentage of overhead expense on business done		25.52
Productive labor		4,350.00
Percentage of overhead expense on productive labor		87.79
Productive labor	$4,350.00	
Merchandise	7,684.00	
First cost	$12,034.00	
Percentage of overhead expense on first cost		31.79
First cost	$12,034.00	
Overhead expense	3,818.00	
Net cost	$15,852.98	
Amount of business	14,960.88	
Net loss	$892.10	or 5.98%

On these results being brought to the attention of the proprietors, they informed me that last year was an off year with them on the shop end of the business, that their business during the five years preceding had run several thousand dollars higher, one year showing as high as $20,000.00 worth of business done, with the same fixed charges and only a few hundred dollars more on the productive labor and merchandise accounts.

We have, therefore, in this case an example of too much plant—stock, office and tools—for the amount of business done last year, or it may be that the owners took some contracts during last year at too close a price. The fact that their productive labor and merchandise accounts were only a few hundred dollars higher, while the total amount of business done was thousands higher in previous years, leads me to designate this as being the "nigger in the wood pile."

A business showing results which are much more encouraging is taken as the next example. It is evident that the owner knows how to run his business and there is food for thought in the difference of the final showing with that of the other cases already considered. The figures follow:

Detail of Overhead Expense.

Salary	$2000.00
Rent	196.00
Light	12.00
Heat	20.00
Telephone	80.00
Horse and wagon	200.00
Bookkeeper	416.00
Insurance	88.00
Taxes	10.00
Cartage	5.00
Carfares	10.00
Bad accounts	50.00
Driver	520.00
Waste material	15.00
Labor lost	20.00
Replacing defective goods	15.00
Allowances	....
Interest on capital	90.00
Postage	25.00
Stationery and printing	70.00
Association dues	16.00
Donations	15.00
Total	$3873.00
Amount of business done	$14,990.00
Amount of overhead expense	3,873.00
Percentage of overhead expense on business done	25.81
Productive labor	4,428.00
Percentage of overhead expense on productive labor	87.48
Productive labor $4,428.00	
Merchandise 4,630.00	
First cost $9,058.00	

Percentage of overhead expense on first cost.....	$49.98
First cost.....	$9,058.00
Overhead expense.....	3,873.00
Net cost.....	$12,931.00

Net profit....$2059.00=13.73 per cent. of business

Summary.

Overhead expense.....	25.81%	$3,873.00
Labor.....	29.54%	4,428.00
Merchandise.....	30.88%	4,630.00
Profit.....	13.73%	2,059.00
	99.96%	$14,990.00

The fact that in these cases the amounts chargeable to productive labor and to merchandise are so near alike, while the results are so different leads me to present them for comparison. The concluding instalment of this study will present four cases of what may be termed large businesses and a comparison of the three classes of plumbing businesses investigated.

The four cases hereinafter discussed are such as come under the category of large business. The first thing that attracts attention is that the overhead cost of doing business is much lower than in those businesses previously considered. The percentage of net profit shown is also lower excepting in case No. 10, where it is higher than those in the small business and medium business class. Case No. 8 is that of a mixed business, about one-half being new construction and one-half reported as being high-class jobbing, father and son being partnership proprietors.

Details of Expense Accounts.

Salary—owner and son	$3,800.00
Rent—shop and stable	1,300.00
Light	46.00
Heat (included in rent)	....
Telephones	96.00
Horse, wagon and autos	1,420.00
Bookkeeper and assistants	2,300.00
Insurance—fire, vehicle and liability	380.00
Cartage	....
Carfares	30.00
Taxes and licenses	60.00
Tools and machinery	300.00
Collections and legal expense	150.00
Bad accounts	400.00
Allowances	150.00
Drivers and stableman	1,320.00
Waste material	50.00
Replacing defective goods	150.00
Interest on capital and commercial	180.00
Postage	45.00
Stationery and printing	75.00
Association dues	24.00
Incidentals (general expense)	150.00
	$12,426.00

Synopsis of the Year's Business.

Amount of business done	$72,130.00
Amount of overhead expense	12,426.00
Percentage of overhead expense on business done	17.22
Productive labor	26,043.00
Percentage of overhead expense on productive labor	47.71
Merchandise	30,601.00
First cost	56,644.00
Percentage of overhead expense on first cost	21.93
Amount of business done	72,130.00
Net cost	69,070.00
Net profit	$3,060.00
Percentage of net profit on business done.	4.24

Case No. 9 is that of a business in a large city in the Middle West. The business on the death of the original owner was incorporated by the son and an old employee, the son acting as general manager and office head, the erstwhile employee acting as superintendent, having charge of the mechanical and outside end. The year the report is on showed about 90% new construction work and 10% repair work. The overhead expense schedule shows the following:

Schedule of Overhead Costs.

Salary of manager		$2,500.00
Salary of superintendent		2,300.00
Light, Heat, Telephone, Bookkeeper, Postage, Stationery and printing	Office expense	2,910.00
Horses and wagons, Cartage, Carfares, Tools, Driver	General expense	3,876.00
Rent		1,300.00
Insurance		450.00
Taxes, Collections, Licenses, Replacing defective goods, Allowances, Association dues, Interest on notes	Special expense	2,420.00
Carry forward		$15,756.00

Brought forward	$15,756.00
Bad accounts (profit and loss charge)	240.00
Waste material—estimated	250.00
Labor lost—estimated	100.00
Interest on capital (3 per cent. on $5,000.00)	150.00
Depreciation (profit and loss charge)	500.00
Total	$16,966.00

Synopsis of Business.

Amount of business done	$98,560.00
Amount of overhead expense	16,996.00
Percentage of overhead expense on business done	17.24
Amount paid out for productive labor	38,465.00
Percentage of overhead expense on productive labor	44.18
Merchandise	41,300.00
First cost	79,765.00
Percentage of overhead expense on first cost	21.30
Amount of business	98,560.00
Net cost	96,761.00
Net profit	$1,799.00
Percentage of net profit on business done	1.82

Case No. 10 shows the best net results of this series. It is the record of a large jobbing and overhauling business, absolutely no new construction work having been done during the year reported on, which was 1912. The schedule is as follows:

Details of Cost Accounts.

Salaries of management	$1,820.00
Rent	1,200.00
Light	14.60
Heat	52.00
Telephone	100.00
Horse, wagon and auto	859.82
Bookkeepers	919.50
Insurance (including liability)	345.83
Taxes (City, State and Federal)	111.40
Cartage	2.00
Carfares	250.00
Tools (replacement and depreciation)	413.57
Collections	....
Bad accounts	178.30
Driver	728.00
Waste material (estimated)	150.00
Replacing defective goods	50.00
Labor lost (estimated)	200.00
Allowances and discounts	502.99
Interest on capital, 3 per cent. on $5,000.00 estimated	150.00
Postage	144.95
Stationery and printing	94.82
Association dues	24.00
Advertising, charities, license fees and petty repairs to vehicles	298.55
Total	$8,610.33

Synopsis of Business for 1912.

Amount of business done	$54,037.47
Amount of overhead expense	8,610.33
Percentage of overhead expense on business done	15.93
Amount of productive labor	17,494.26
Percentage of overhead expense on productive labor	49.22
First cost	36,113.44
Percentage of overhead expense on first cost	23.84
Merchandise	18,619.18
Amount of business done	54,037.47
Net cost	44,723.77
Net profit	9,313.70
Percentage of profit on business done	17.23

This case No. 10 proves up like this:

Overhead expense	15.93%	$8,610.33
Merchandise	34.45%	18,619.18
Labor	32.37%	17,494.26
Profit	17.23%	9,313.70
Year's business	99.98%	$54,033.47

The apparent loss of 0.02 of 1% in the proof comes through not having carried the calculations of percentage beyond two decimal points. Had they been carried to their ultimate conclusion the 0.02 of 1% would have been made up. The managing proprietor in this case is one of those absolutely honest, hard-working individuals of which the craft has so many. That his results are quite above the average, both as regards amount of business and financial returns, is entirely due to individual competency, and to the fact that he knows how to do business as well as how to do plumbing work. In the next and final installment will be shown a comparative table of the different businesses discussed.

CHAPTER VI.

COMPARATIVE OVERHEAD EXPENSE STATEMENTS.

In tabulating the experiences that have been used for these articles cases No. 1 to 8 and No. 10 are presented inclusive and No. 9 separately, as having 6 years' experience to hand on the last case, affords opportunity for information of a character not disclosed in the other cases.

The first thing that attracts attention is the fact that there does not seem to be any co-relation between overhead expense percentage and profit percentage. Case No. 1 with 25.4% overhead expense shows 4.09% profit, No. 6 with 25.52% overhead expense shows 5.96% loss and case No. 7 with 25.83% overhead expense shows 13.73% profit. Case No. 2 with 17.65% overhead expense shows 2.77% loss, and No. 8 with 17.24% overhead expense shows 4.24% profit. It appears from this that the influence of overhead expense on profit is not empirical.

The next proposition appearing is the apparent fact that overhead expense varies considerably in accordance with the character of business and that the dominating factor influencing overhead expense and all other percentages, in fact, governing even the total amount of business done, is designated in line No. 10, viz., percentage added to first cost, first cost being merchandise cost plus productive labor.

For instance, case No. 4 shows:

Amount of business	$14,500.00
First cost	12,100.00
Percentage overhead expense on business.	20.65
Percentage loss on business	4.1
Percentage added to first cost	19.83

Now if 36% had been added to first cost, the result would have been as follows:

First cost	$12,100.00
36 per cent	4,356.00
Amount of business	$16,456.00
Total	15,095.00
Profit	$1,361.00
Amount business	$16,456.00
First cost	12,100.00
Percentage overhead expense on business.	18.2
Percentage profit on business	8.27
Percentage added to first cost	36.00

On the other hand, case No. 5 now shows:

Amount business	$17,000.00
First cost	12,500.00
Percentage overhead expense on business.	21.17
Percentage profit on business	5.30
Percentage added to first cost	36.00

Had the owner added only 20% to first cost the result would have been as follows:

First cost	$12,500.00
20 per cent	2,500.00
Amount business	$15,000.00
Total cost	16,099.00
Loss	$1,099.00
Amount business	$15,000.00
First cost	12,500.00
Percentage overhead expense on business.	23.99
Percentage loss on business	7.32
Percentage added to gross cost	20.00

The percentage as per lines No. 12 and 13 would change accordingly. Those of lines No. 16, 17 and 18 would remain as they are.

I have used cases No. 4 and 5 for this comparison because the stable or least variable factors (merchandise and productive labor comprising the first cost) are practically the same, being $12,100.00 in case No. 4 and $12,500.00 in case No. 5. The variant or more controllable factor, namely, percentage added to gross cost, is the one factor that turns profit into loss or loss into profit. The amount (not percentage) of overhead expense is governed by local circumstances, by character of business, by the personality of the proprietor and by firmly established business conditions. We find in these cases that, for instance in case No. 4, $12,100.00 worth of labor and material carried $2995.00 of overhead expense, while in case No. 5, $12,500.00 worth of labor and material carried $3599.00 of overhead expense, a difference of $400.00 in first cost carrying a difference of $604.00 of overhead expense.

All this shows us that it is not safe for any man to estimate on any computed average of overhead expense. It is absolutely necessary that we find out each year what our actual overhead expense is and govern ourselves accordingly. For those who have no experience to guide them, we can only say that for businesses below $10,000.00 the average expense shows upward of 25%. Between $10,000.00 and $25,000.00 the averages run between 20 and 25%, while above $25,000 they run from 13 to 20%.

TABLE 1.

	Case No. 1	Case No. 2	Case No. 3	Case No. 4	Case No. 5	Case No. 6	Case No. 7	Case No. 8	Case No. 10
Amount of 1-year business (1) ...	$4,983.00	$24,480.00	$6,965.00	$14,500.00	$17,000.00	$14,960.00	$14,990.00	$72,130.00	$54,037.00
Amount overhead expense (2).....	1,265.00	4,322.00	2,278.00	2,995.00	3,599.00	3,818.00	3,873.00	12,426.00	8,610.00
Amount paid out for productive labor (3)	1,191.00	7,240.00	1,859.00	4,600.00	4,500.00	4,350.00	4,428.00	26,043.00	17,494.00
Amount paid out for merchandise (4).....	2,324.00	13,597.00	2,416.00	7,500.00	8,000.00	7,684.00	4,630.00	30,601.00	18,619.00
Productive labor, merchandise, 1st cost (5)	3,515.00	20,837.00	4,276.00	12,100.00	12,500.00	12,034.00	9,058.00	56,644.00	36,113.00
Productive labor merchandise, overhead expense (6).....	4,780.00	25,160.00	6,554.00	15,095.00	16,099.00	15,852.00	12,931.00	69,070.00	44,723.00
Net profit (7).....	203.00	....	410.00	....	901.00	....	2,059.00	3,060.00	9,313.00
Net loss (8)	....	680.00	....	595.00	....	892.00	....	....	....
Amount business less first cost (9).....	1,468.00	3,643.00	2,689.00	2,400.00	4,500.00	2,926.00	5,932.00	15,486.00	17,924.00
Percentage added to first cost (10).....	41.76	17.48	62.88	19.83	36.00	24.31	65.48	27.34	49.63

TABLE 1.

	Case No. 1	Case No. 2	Case No. 3	Case No. 4	Case No. 5	Case No. 6	Case No. 7	Case No. 8	Case No. 10
Percentage overhead expense of business (11) ..	25.40	17.65	32.71	20.65	21.17	25.52	25.83	17.24	15.93
Percentage merchandise of business (12).....	46.62	55.54	34.68	51.72	47.50	51.36	30.88	42.42	34.45
Percentage labor of business (13) .	23.90	29.57	26.69	32.41	26.47	29.08	29.54	36.15	32.37
Percentage profit of business (14) .	4.09	....	5.88	....	5.30	....	13.73	4.24	17.23
Percentage loss of business (15) ..	....	2.77	....	4.10	....	5.96	....	....	....
Percentage overhead expense estimated on P. labor (16)	106.22	59.69	122.54	65.11	79.97	87.79	80.26	47.71	49.22
Percentage overhead expense estimated on merchandise (17).....	54.43	31.78	94.29	39.93	44.98	49.68	83.65	42.31	46.24
Percentage overhead expense estimated on first cost (18)...	35.99	20.70	53.27	24.75	28.79	31.79	40.94	21.93	23.84

Lines No. 3 and 4 also show a wide discrepancy, no hard and fast rules being deducible therefrom further than this general fact, that according as job work or new construction work dominate in any shop, so will labor or merchandise be the larger factor.

Lines No. 11, 16, 17 and 18 show the different percentages that must be provided for accordingly as one wishes to load his overhead expense on any one or another item composing the total business or on the total business itself. To take up the advantages or disadvantages of these various methods would need a separate treatise. So long as the overhead expense is provided for, that is the important matter.

The governing facts as to loading the O. H. X. on different items are fairly covered in the question and answer section of this book.

Look now at case No. 9 covering four years of business experience.

All that has been said of the tabulation is emphasized in this showing. The domination of line No. 10 is even more accentuated as the influence of personality remains the same. It shows plainly the fluctuating results of an attempt at business expansion. It might be noted in passing that the desire on the part of the firm to gobble a very large share of the work in that town resulted in a contraction in business on the part of the other five firms in the town. In order to get their share of the work they also started to cut. The result is

TABLE NO. 2.—CASE NO. 9.

	1909	1910	1911	1912	1913	1914	Av. 6 yrs.
Amount 1 years' business (1)	$53,236.00	$70,864.00	$129,452.00	$98,560.00	$82,925.00	$70,706.00	$67,624.00
Amount O. H. X. (2)	13,761.00	14,364.00	17,760.00	16,996.00	15,291.00	14,964.00	15,498.00
Amount paid for productive labor (3)	16,406.00	24,476.00	48,320.00	38,465.00	29,624.00	21,860.00	29,858.00
Amount paid for merchandise (4)	18,214.00	28,248.00	53,480.00	41,300.00	35,829.00	30,721.00	34,632.00
First cost (5)	34,620.00	52,724.00	101,800.00	79,765.00	65,471.00	52,581.00	47,827.00
Total or net cost (6)	48,381.00	67,088.00	119,560.00	96,761.00	80,762.00	67,745.00	80,049.00
Net profit (7)	4,855.00	3,776.00	9,892.00	1,799.00	2,163.00	2,961.00	4,241.00
Net loss (8)	....	....	....	....	....	....	....
Amount business less first cost (9)	18,616.00	18,140.00	27,652.00	19,765.00	17,454.00	18,115.00	19,957.00
Percentage added to first cost (10)	53.77	34.59	27.16	23.56	26.65	34.64	41.10
Percentage O. H. X. of business (11)	25.85	20.27	13.72	17.24	18.43	21.16	21.11
Percentage merchandise of business (12)	34.21	39.86	41.31	41.90	43.20	43.44	51.21
Percentage labor of business (13)	30.82	34.53	37.32	39.20	35.78	30.91	44.15
Percentage profit of business (14)	9.12	5.32	7.65	1.82	2.60	4.18	6.27
Percentage loss of business (15)	....	....	....	....	....	....	....
O. H. X. estimated on labor (16)	83.87	58.68	36.75	44.18	51.58	68.50	51.90
O. H. X. estimated on merchandise (17)	75.55	50.85	33.21	41.15	42.67	48.71	44.75

shown in the 1912 business. Each year our friends cut down the percentage added to the first cost in order to get more business. The other fellows also cut. Our friends had to cut still more until in 1912 they came perilously near to getting into the "loss" class. It will be very hard for them to get back to the standard of business enjoyed in 1909. In other words, they have demoralized the business in that town for themselves and all others for some time to come.

The foregoing shows one of the results of expansion by taking a large amount of business at a very close margin on the theory that the larger the business the smaller the overhead expense and consequently the larger the profit must be. The year after the death of the original owner this firm did only $53,000.00 worth of business, with a 24.84% overhead expense and cleared a profit of 9.12%. The new owners felt that it was up to them to expand, as the manager expressed himself, it was up to him to make good. He figured that they could do a great deal larger business with their existing plant without increasing their fixed charges. Therefore, their overhead expense percentage would be lower, and consequently they could take work at a considerably lower price and still make a larger percentage of profit.

The following year showed $70,864.00 worth of business with 20.27% of overhead and 5.32% of profit. This was not the result anticipated. However, he felt that he was right in principle and decided to expand some more. The following year

showed $129,452.00 worth of business, with 13.72% of overhead expense and 7.65% of profit. During this year the flexible items of the overhead expense had risen on account of the rising volume of business, for, whereas, in 1909 the total amount of overhead expense had been $13,761.00, in 1911 it was $17,760.00, an increase of $4000.00 The following year he felt that they were carrying too large a volume of commercial paper and too large an outstanding account, and found it necessary to pull in a little. He tried to get a little better price for their work in 1912 and consequently obtained less work. The plant, being expanded, was consequently a little topheavy. Prices were again pinched in an effort to catch up, and 1912 consequently showed $98,560.00 worth of business, with a 17.24% overhead and 1.82% profit.

It was in January 1913 that I received the statement of their business 1909-1912. When I had worked out their percentages and cards for each year and they compared one year with the other they came to the conclusion that to continue on along the same lines could mean only one thing, and that was ultimate failure.

They immediately agreed to reduce the salary of management. The amount thus saved was invested in advertising, a thing they had never indulged in before, and decided that they must obtain better prices rather than more work. In short look for and go after quality business rather than quantity. There were a number of cheap

contracts unfinished which kept down the net results for 1913. However, an improvement was shown for that year as with $16,000.00 less of business their results were approximately ¾% better on the net profit although the overhead went up 2¾%.

In 1914 having completed the cheap work on hand the previous year their showing is still better as the net profit jumped up to 4.18% as against 1.82% in 1912 while their overhead was about the same as in 1913.

The last column is added to show the vagaries of averages. The average of line No. 1 is most closely approached in 1914. That of line No. 2 in 1913. That of line No. 3 in 1913. That of line No. 4 in 1913. That of line No. 5 is not approximated in any year of the six. Line No. 7 finds its approximation in 1909 and 1910 and so on.

Again it might be said that the law of averages is of use only for those who have no personal experience to guide them. Each year brings its own problems and each year will demand different treatment according to local conditions, according to personal financial conditions, and according to the size of the plant and the character of the work.

How very important then does it appear to be that we should know each year what our overhead expense has been, what our year's business has brought forth in the line of net profit or loss. Without this knowledge we are only guessing.

Very interesting is the comparative schedule of overhead expense (see page 119).

Overhead Expense.

	1909	1910	1911	1912	1913	1914
Salaries { Manager	$2,500.00	$2,500.00	$2,500.00	$2,500.00	$2,300.00	$2,300.00
Salaries { Superintendent	2,000.00	2,000.00	2,300.00	2,300.00	2,100.00	2,100.00
Rent { Taxes, upkeep and interest on value of buildings, less rent received	950.00	1,150.00	1,140.00	1,300.00	900.00	968.00
Office expense { Light, heat, telephone, bookkeeper, postage, stationery, printing	2,050.00	2,100.00	2,840.00	2,910.00	2,500.00	2,481.00
General expense { Vehicles, cartage, carfares, tools, drivers	2,566.00	3,240.00	3,900.00	3,876.00	3,462.00	3,524.00
Insurance: Fire, vehicle, liability	350.00	510.00	620.00	450.00	in general	in general
Special expense { Taxes, license, legal, collections, replacements, allowances, association dues, int. commercial paper	1,845.00	1,964.00	2,840.00	2,420.00	2,500.00	1,897.00
Profit and loss: Bad account, etc	680.00	360.00	520.00	240.00	182.00	168.00
Waste material: (estimated)	200.00	250.00	250.00	250.00	200.00	200.00
Labor lost: (estimated)	100.00	150.00	200.00	100.00	100.00	actual 196.00
Interest on capital at 3%	120.00	150.00	150.00	150.00	150.00	150.00
Depreciation	400.00	500.00	500.00	500.00	500.00	400.00
Special advertising	....	....	....	....	400.00	580.00
Total	$13,761.00	$14,364.00	$17,760.00	$16,996.00	$15,294.00	$14,964.00

These figures when compared with the business analysis covering the same term tend to show the reason for the fluctuation of amount of O. H. X. with the changing amount of business. That although the overhead percentage usually lowers as business increases, the actual amount of overhead rises, although not in the same ratio. The various items grouped under the heading of rent, require some explanation.

The property is owned by the firm. Part thereof is rented out so their rent charges consist of interest on valuation plus taxes and upkeep, minus rents received. In 1913 they decided that they could get along with less room and let out additional store space, thus bringing down their own rent. The progressive rise from 1909 to 1912 was partly due to rise in valuation which of course made the interest charges progressively higher. The general expense item does not show the decline in 1913 and 1914 that it should because the insurance item which in 1909 to 1912 had been reported separately was in the later years included in general expense. The special expense account shows fluctuations in unison with the rise and fall of total amount of business. When the firm's attention was called to this fact they laid the cause on two items principally; namely, replacements and the cost of carrying commercial paper. When the fact was pointed out that it is usual, that the maker pays the interest on commercial paper; the answer was, "Yes, but how is it when you have to issue the paper yourself to carry the volume of business"? The profit and

loss line looks very erratic. It follows a course all its own without any reference to any other factor. Bad accounts were unusually high during the beginning of the term. Evidently the management learned to be cautious by this experience as the later years show only about ⅓ of 1% which is quite low.

Waste material and labor lost were estimated excepting in 1914 during which year close watch was kept on the latter item. The manager informs me that as a result he is quite sure that this item had been under estimated in former years. Interest on capital invested was on an estimated investment. This does not fluctuate for the reason that interest on commercial paper to carry an expanded credit was charged under special expense. Depreciation is estimated also on an estimated investment. In this method of accounting it evidently is meant to balance in a way the appreciation due to renewals and additions to tools, vehicles, fixtures and furnishings.

The special advertising was done in the daily paper of the town and in the weekly of the neighboring county seat, a good size advertisement for quality work being run at intervals of two or three issues.

The gentlemen claim good results although not up to expectations. This is of course problematic as it is not an easy matter to trace results directly to advertising.

I would caution the reader that his personal experience may differ considerably from that pre-

sented. But—present it, as an actual experience which for that reason has great value as showing us what may be expected under similar circumstances.

Very interesting, however, is the application of the information deduced from the various foregoing tables when applied to general business conditions.

Of 122 shops reporting for the term July 4, 1911, to July 4, 1912:

Four report between $2000.00 and $5000.00 worth of business.

Sixteen report between $6000.00 and $10,000.00 worth of business.

Thirty-seven report between $10,000.00 and $20,000.00 worth of business.

Twenty report between $20,000.00 and $30,000.00 worth of business.

Fourteen report between $30,000.00 and $40,000.00 worth of business.

Four report between $40,000.00 and $50,000.00 worth of business.

Ten report between $50,000.00 and $75,000.00 worth of business.

Eleven report between $75,000.00 and $100,000.00 worth of business.

Six report over $100,000.00 worth of business.

If this average holds good throughout the trade (and we have no reason to think otherwise) the large majority of plumbing businesses are about $18,000.00 in size. The average overhead expense, according to the cases reported, in a business of this size is

from 20 to 25% and as of these the numerical preponderance is between $10,000.00 and $20,000.00, the average overhead expense can safely be stated as being nearer 25 than 20%. For businesses below $10,000.00 all indications point to an average of about 23 to 30%. So we estimate that 75% or three-quarters of the plumbers are carrying an overhead expense of about 25%. The other 25%, or one-quarter, run down from 20 to 13% overhead expense, according to the amount and character of the business done.

Nowhere do we find any justification for adding 10% or 15% to first cost (labor and material) *with the expectation of showing a net profit.* It just can't be done.

CHAPTER VII.

THE VALUE OF ANNUAL SYNOPSIS OF BUSINESS.

A few days after lecturing in a certain city I received by mail a statement with the request to work out a synopsis for the proprietor.

SYNOPSIS FOR 1913.

Amount of business	$24,760.00
Amount overhead expense	4,201.00
Amount productive labor	5,851.00
Amount merchandise	10,683.00
Gross or first cost	16,534.00
Net or final cost	20,735.00
Net profit	4,025.00
Amount business less gross cost	8,226.00
Percentage added to gross cost	49.69
Percentage O. H. X. of business	16.96
Percentage merchandise of business	43.14
Percentage labor of business	23.63
Percentage profit of business	16.21
Percentage O. H. X. estimated on labor	71.83
Percentage O. H. X. estimated on merchandise	39.32
Percentage O. H. X. estimated on gross cost	25.40

THE PROOF.

O. H. X.	=16.96% =	$4,199.296
Labor	=23.63% =	5,850.788
Merchandise	=43.14% =	10,681.464
Profit	=16.21% =	4,013.596
Total	=99.94% =	$24,745.144
Mathematical loss	= .06% =	14.856
	100% =	$24,760.000 amt. business 1913

This year I received the following letter.

Feb. 1st, 1915.

MR. H. F. BAILLET,
Irvington, N. J.

DEAR SIR:

Have enclosed a statement of my last year's 1914 business. Thought you might be glad to compare it with last statement you figured up for me.

Am sorry to have to send you such a bum statement, which does not compare at all favorably with last statement.

Yours very truly,

1914.

SYNOPSIS.

Amount of business	$18,789.74
Amount O. H. X.	4,296.95
Amount paid productive labor	5,542.32
Amount paid merchandise	8,181.09
Gross cost labor and merchandise	13,723.41
Net cost labor, merchandise and O. H. X.	18,020.36
Net profit	769.38
Amount business less gross cost	5,066.33
Percentage added to gross cost	36 18/100%
Percentage O. H. X. of business	22 87/100%
Percentage merchandise of business	43 54/100%
Percentage labor of business	29 49/100%
Percentage profit of business	5 60/100%
Percentage O. H. X. on productive labor	77 53/100%
Percentage O. H. X. on merchandise	52 52/100%
Percentage O. H. X. on gross cost	31 31/100%

To which the following reply was forwarded:

Feb. 5, 1915.

MY DEAR FRIEND J.:

Your statement for 1914 to hand. Thanks for the confidence shown. It is a very interesting document compared with that of 1913.

It shows first that your opportunities were probably not as good as the previous year—because the gross cost namely labor and merchandise amounting to $16,534.00 in 1913 only amounted to $13,723.00 in 1914. However, that in itself would not have been so much of a slump had you managed to stick to the gross loading of the former year. The percentage added to gross cost in 1913 was 49.69% whereas in 1914 it was only 36.18%.

While the *amount* of O. H. X. did not vary materially the *percentage* did jump from 19.96 to 22.87 due to the fact of less business, a smaller loading and no paring of expenses. Nor do I think that any paring was called for, as you are still under the average.

I presume that owing to the general business depression you were in a measure obliged to take work at a lower margin than had been the case in the previous year. However, it is interesting to see what would have happened had you received the higher margin.

Gross cost 1914 was	$13,723.00
Percentage added to gross cost 1913 was 50% = would be	6,861.00
Total amount business would have been	$20,584.00
Net cost 1914	18,020.00
Profit would have been	$2,564.00
Percentage O. H. X. of business would have been	20.87
Instead of	22.87
Percentage profit would have been	12.45
Instead of	5.60

You can readily see that the crux of the situation is: *The percentage added to gross cost!*

The evident fact is that you have received less business and carried on that less business at lower prices in 1914 than in 1913 without any reduction in your overhead expense.

However, by using the percentage method of synopsis you *know* just exactly what you have done; how and why it happened and can govern yourself accordingly.

The business man who does not use this or as true a method of synopsis and analysis, while he may know that something has hit him; does not, cannot know how or why and therefore will not know what to do to safeguard his business. He blames it to hard luck and does the same thing over again.

How does this strike you?

Sincerely, H. F. B.

Feb. 8, 1915.

My Dear Mr. Baillet:

Your favor of 5th inst. at hand and carefully read. Much obliged to you for the exhaustive study made, for which I am surely indebted to you.

My own theory of conditions last year was that I did considerably less work, with the same overhead and practically the same labor. I knew that I was wrong on my labor, as I had an expensive crowd on. Had very few helpers and

practically no apprentices. Kept my pay roll up. Work was harder to get last year and is going to be harder still this year, so having been duly "foe-warned," if caught again by the same hook, the fault will be my own, hey?

Very much obliged to you. Will be glad to send you data a year hence, so that you can get an outline on just how bum the competition has been here!

Yours very truly,

This correspondence needs no further elucidation. It graphically explains the absolute necessity of knowing what it costs you to do business and the need of giving yourself a synopsis of your business at least yearly, so you may know what you are doing instead of guessing.

SYNOPSIS CARDS USED IN THE INVESTIGATION AND RECOMMENDED FOR FILING.

SYNOPSIS OF BUSINESS FOR ONE YEAR

FROM.....TO.....
Amount of business.....$.....
Amount (O. H. X.) overhead expense.....
Amount paid out productive labor.....
Amount paid for merchandise.....

Gross cost	Labor.....	.....
	Merchandise.....	
Net cost	Labor.....	.....
	Merchandise.....	
	O. H. X.....	

Net profit.....
Net loss.....
Amount business, less gross cost.....
Percentage added to gross cost.....
" O. H. X. of business.....
" Merchandise of business.....
" Labor of business.....
" Profit of business.....
" Loss of business.....
" O. H. X. estimated on productive labor.....
" O. H. X. estimated on merchandise.....
" O. H. X. estimated on gross cost.....

When you add 15% to labor and material you are losing money. Figure it out for yourself and know what you are doing.

Overhead Expense Cards Used in this Investigation and Recommended for Filing.

COMPLIMENTS OF MASTER PLUMBERS' ASSOCIATION.

Fill this out from your own books and know what it costs you to do business.

Overhead Expenses.

Salary.....$.....
Rent.....
Light.....
Heat.....
Telephone.....
Horse and wagon.....
Bookkeeper.....
Insurance.....
Taxes.....
Cartage.....
Carfares.....
Tools.....
Collections.....
Bad accounts.....
Driver.....
Waste materials.....
Replacing defective goods.....
Labor lost.....
Allowances.....
Interest on capital, 3 per cent. on.....
Postage.....
Stationery and printing.....
Association dues.....
.....
.....
Total, $.....